

Operating Manual
SYCOP 3 System Control Panel
for Zoom and Stereo Microscopes

You have purchased a product of the House of Zeiss. Before using the instrument the first time, please read this manual in order to maintain the high quality of the instrument and ensure reliable work with it for a long time.

Knowledge of this manual is required for the operation of the instrument. Would you therefore please make yourself familiar with the contents of this manual and pay special attention to hints concerning safe operation of the instrument.

The specifications are subject to change; the manual is not covered by an update service.

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1 INTRODUCTION

1.1 General Information

The SYCOP 3 system control panel and the EMS 3 controller to be used with it have been designed, produced and tested in compliance with the DIN EN 61010-1 (IEC 61010-1) and IEC 61010-2-101 standards governing safety requirements applicable to electrical equipment for measurement, control and laboratory use.

The SteREO Discovery.V12/V20 and SteREO Lumar.V12 microscopes and the Axio Zoom.V16 microscope meet the requirements of European IvDD Directive 98/79/EC (In Vitro Diagnostic Medical Devices) and are marked with the  label.

This Operating Manual contains information and warnings that need to be observed by the user.

The following warning and caution symbols are used in this Operating Manual:

**CAUTION**

This symbol indicates a hazard that may arise to the user.

**CAUTION**

Optical radiation is emitted. Do not look into the beam. It may be dangerous for your eyes. (See Section 2.3.4).

**CAUTION**

Crushing hazard!

**CAUTION**

Hot Surface!

**CAUTION: High-energy UV radiation!**

Risk of damage to your eyes and skin!

**CAUTION**

Pull the power plug before opening the device!

**ATTENTION**

This symbol indicates a hazard that may arise to the device or device system.

**NOTE**

This symbol marks a note to which special attention needs to be paid.

1.2 Notes on Device Safety



Be sure to use the SYCOP 3 system control panel and its original accessories only for the applications described in this Operating Manual. The manufacturer cannot assume liability for any other use. This includes individual assemblies or single parts.

Alterations and repairs of this device and of devices operated together with the SYCOP 3 may be performed by our service technicians or by authorized personnel only. The manufacturer of the device cannot be held liable for damage caused by unauthorized interventions in the device. Unauthorized interventions will also void any guarantee / warranty claims.



Before setting up the device, make sure that all transport locks (if applicable) are properly removed.



The device may be operated by specially trained personnel only. Such personnel must be advised of the potential hazards existing in connection with microscoping and the application in question. The SYCOP 3 is a precision device, whose functionality can be impaired or destroyed in the event of improper intervention.



Be sure to insert the power plug of devices with metal housings (e.g., EMS 3, HXP 200 C) into a grounded (earthed) power outlet only. The protective effect must not be defeated by an extension cable that does not have a protective grounding conductor.



If any protective measures are found to be no longer effective, put the device out of operation and protect it against any inadvertent use. Contact Zeiss Customer Service or Carl Zeiss Microscopy Service to get the device operational again.



Before putting the device into operation, be sure to check whether the supply voltage is suitable for that device.



Always pull the power plug before opening the device and replacing fuses. The device fuses used must be of the type specified in Section 5.2 (Page 77). Never employ any makeshift fuses or short-circuit fuse holders.



Make sure that all cables are properly connected. Then check carefully that no cables have been mixed up.



Do not switch on the device until all cables have been connected. Always turn the device off before disconnecting a cable.



Make sure that no other power supply unit with an RJ45 port is connected to the system when using the EMS 3 controller. Exceptions will be described separately.



For microscopes equipped with motorized focusing drives, there is a risk of **fingers getting crushed** in the working area, when the microscope body is lowered.



- Before switching the device on, check that the joystick on the SYCOP 3 is in no other than the zero position and the connected footswitch is freely accessible.
- Automatic movement can be stopped by pressing the STOP pushbutton on the focusing drive (Fig. 1/1) or the STOP button on the SYCOP 3 (Fig. 1/2), while the up and down movements of the joystick or of the knurled wheel may be interrupted on the SYCOP 3 or on the HIP or by pressing the Memory 1 or Memory 2 button on the HIP.
- Do not put your hands into the potential travel path of the motorized stage. Your hands may get crushed or injured when the stage is positioned by the control system.



Be sure to adjust the end switch at once to avoid damage to the microscope from movements of the motorized focusing drive.

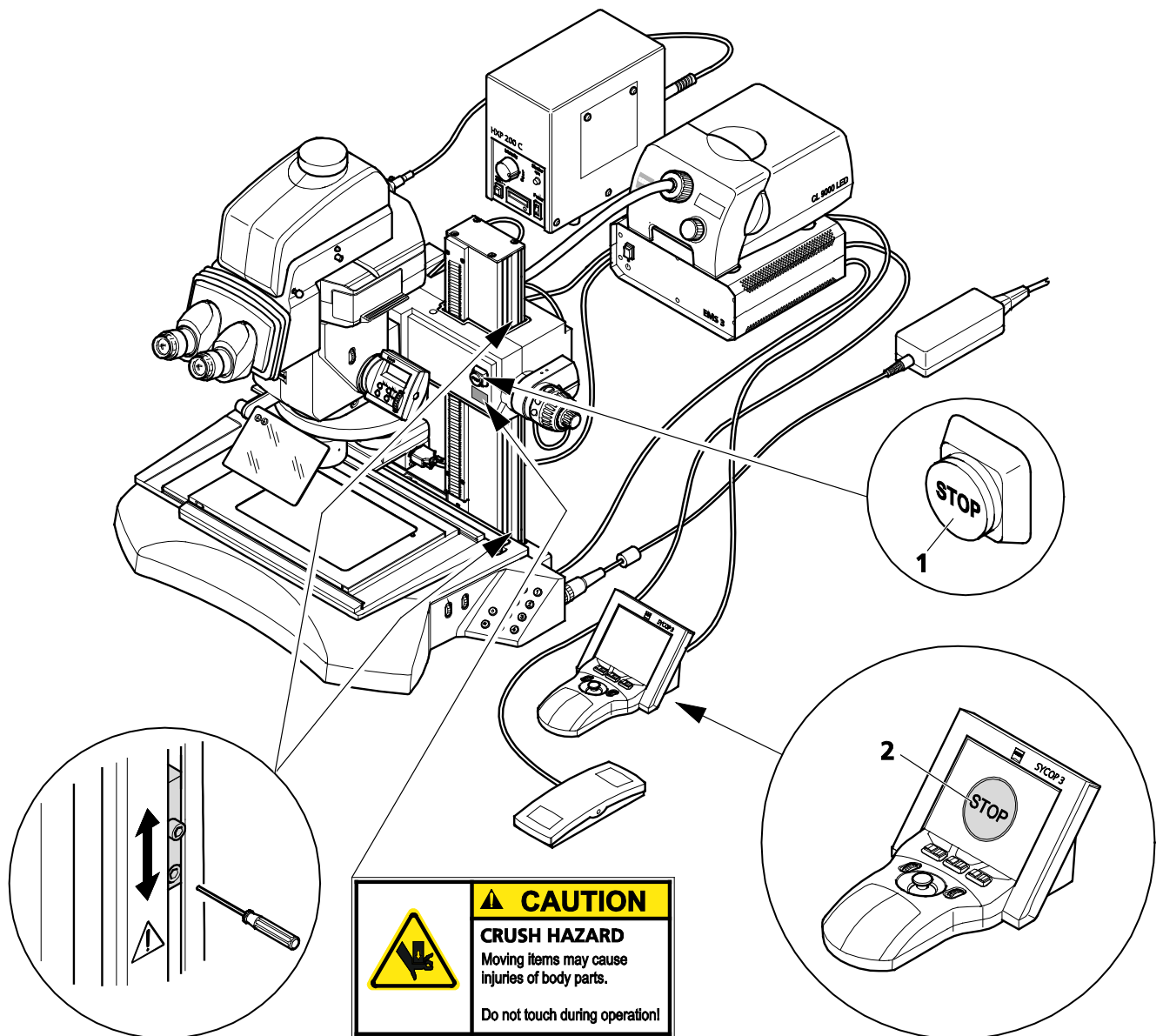


Fig. 1 STOP button on the Motorized Focusing Drive and STOP Button on the Touchscreen



The units are not equipped with any special devices that offer protection against caustic, potentially infectious, toxic, radioactive or other health-impairing specimens. When working with such specimens, be sure to observe all legal requirements, notably national accident prevention regulations.



Do not operate the devices supplied in explosion hazard areas, in the presence of volatile anesthetics or flammable solvents, such as alcohol, benzene or similar substances.



Be sure to follow the separate manufacturer's operating instructions and heed the general comments and safety suggestions when connecting and operating the HXP 200 C illuminator.



The HXP 200 C generates high-energy light, which is not fully visible. Danger of glare and blindness! Never look directly into the light beam or light guide output.



The lamp used in the HXP 200 C gets very hot during operation and is under high internal pressure when hot. Risk of burns and explosion!

Be sure to follow the manufacturer's instructions when replacing the lamp.

Be certain to operate the illuminator only if it is properly connected to a grounded safety socket.



Avoid touching the hot lamp housing. Before replacing a lamp, pull the power plug and allow some 15 minutes for the lamp to cool down.



Do not place combustible and highly inflammable materials near the light beam.



Gas discharge lamps emit ultraviolet radiation, which may cause burns on eyes and on the skin. Therefore, be absolutely certain to avoid looking into the light, as well as the direct incidence of light on the skin. When microscoping, always use the protective equipment supplied with the device, such as dazzle protection. When heated, gas discharge lamps are under high internal pressure. For this reason, be sure to replace them only when they have cooled down. To do so, wear protective gloves and safety goggles.



Dirt and dust may adversely affect the performance of the device. For this reason, be certain to protect the device as much as possible from such adverse effects and to place the dust cover over the device when you do not use it. Check that the device is switched off before covering it. Avoid large temperature variations, the incidence of direct sunlight and vibrations.



Clogged or covered ventilation slats may lead to heat build-up, which could damage the device and, in extreme cases, cause a fire. Always keep ventilation slats clear and make sure that no objects are put or can fall into them. See to it that a distance of at least 15 cm is observed between any electrical component and assembly and combustible items and walls.



Do not put defective devices in household waste. They have to be disposed of in accordance with Directive 2002/96/EC (WEEE).



Also, specimens need to be properly disposed of in conformity with applicable legal provisions and in-house procedures.



Be sure to follow the separate operating instructions, including the general and safety comments contained in them, for the stereo and/or zoom microscopes used and for any accessories that may be employed.

- Axio Zoom.V16 Operating Manual: Order No. 435080-9030-701, English
- SteREO Discovery Operating Manual: Order No. M60-2-0055 e, English
- SteREO Lumar Operating Manual: Order No. M60-2-0044 e, English
- Fluor-Illuminator Z mot. Operating Manual: Order No. 435180-9060-701, English
- HXP 200 C Illuminator Operating Manual



Warning and information labels are shown in Section 2.3, starting on Page 14.

1.3 Notes on Warranty

The manufacturer of the device warrants the device to be free from defects in materials and workmanship at the time of its delivery. Any defect must be reported without delay, and every effort is to be made to minimize damage. If such a defect is reported, the manufacturer of the device is obligated to correct the defect, at its option, by repairing the device or delivering a device that is free of defects. No warranty will be provided in the event of defects caused by natural wear and tear (in particular, defective consumables) and improper operation.

The manufacturer of the device will not be liable for any damage attributable to operation errors, negligence or tampering with the device. This will especially be true for damage caused by the removal or replacement of components or the use of accessories made by other manufacturers. Acts of this kind will void all and any warranty.

With the exception of the activities listed in this Operating Manual, no maintenance and repair work may be performed on the microscopes. Repairs may only be made by Carl Zeiss Customer Service or by personnel specially authorized by it. Should the device malfunction, please contact Carl Zeiss Microscopy Service in Germany first or get in touch with your Carl Zeiss agent abroad.

2 DESCRIPTION

2.1 Intended Use

With the SYCOP 3 system control panel and the EMS 3 controller required for it, the following stereo and zoom microscopes can be operated:

- SteREO Discovery.V12/V20,
- SteREO Lumar.V12,
- Axio Zoom.V16.

The correct operation of the above microscope systems is essential for their safe and successful functioning. Before setting up, putting into operation and utilizing the SYCOP 3, be sure, therefore, to carefully read this Operating Manual and the relevant operating manuals for the microscopes connected and for other components and accessories that may be used with them and to make yourself thoroughly familiar with their contents.

Keep the operating manuals in a place where all the users can, at any time, access the information required for the use of the microscope system.

CAN components connected to the system are controlled and monitored via joystick, scroll wheels, pushbuttons, (optional) footswitches and touchscreens.

2.2 Scope of Supply

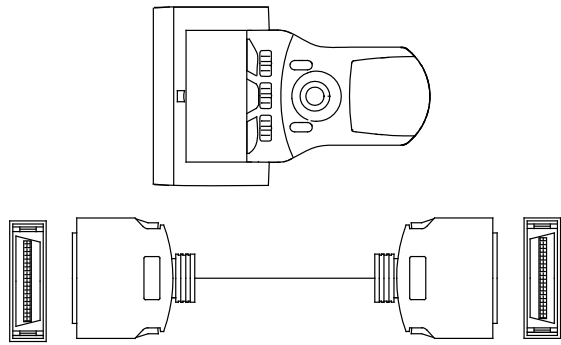
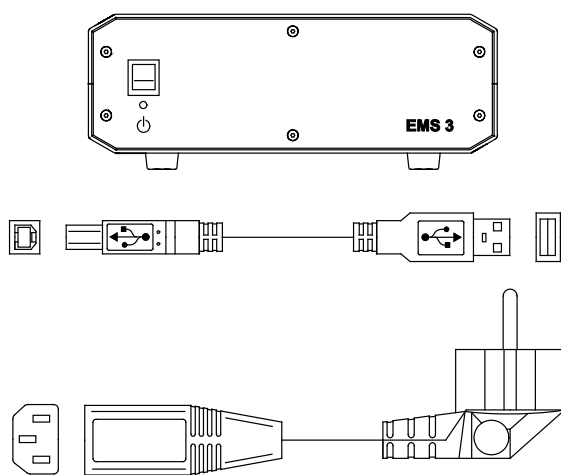
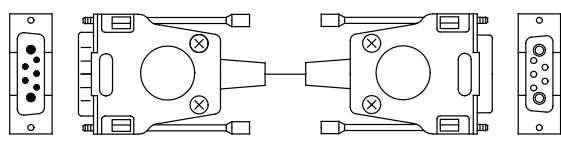
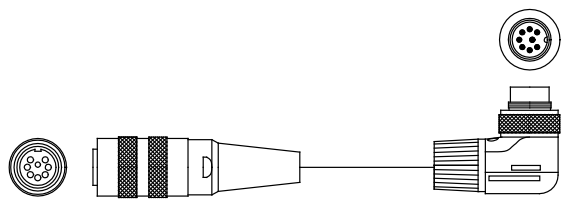
| Name / Order No. | Figure | Comment | Location No. (Fig. 6) |
|--|--|--|-----------------------|
| SYCOP 3 System Control Panel 435611-9010-000 |  <p>The figure shows the SYCOP 3 System Control Panel at the top. Below it is an MDR 2x20 cable with two 20-pin connectors and a central cable body.</p> | SYCOP 3 MDR 2x20 cable | ② |
| EMS 3 controller 435610-9010-000 |  <p>The figure shows the EMS 3 controller at the top. Below it are a USB 2.0 cable with a USB-A connector and a USB-B connector, and a country-specific power cord with a power plug and a multi-pin connector.</p> | EMS 3 USB 2.0 cable Country-specific power cord | ⑥ ⑨ |
| EMS 3 / CMD focus unit 3 cable 435403-9030-000 |  <p>The figure shows the EMS 3 / CMD focus unit 3 cable, which consists of two multi-pin connectors connected by a central cable.</p> | | ① |
| Control cable for KL 2500 LCD 435600-8306-000 |  <p>The figure shows the control cable for the KL 2500 LCD, featuring a circular connector on one end and a multi-pin connector on the other.</p> | Required only for the connection of a KL 2500 LCD cold-light source. | ⑦ |

Table 1 Scope of Supply of the SYCOP 3 System Control Panel

2.3 Microscope Systems

2.3.1 Axio Zoom.V16 Zoom Microscope

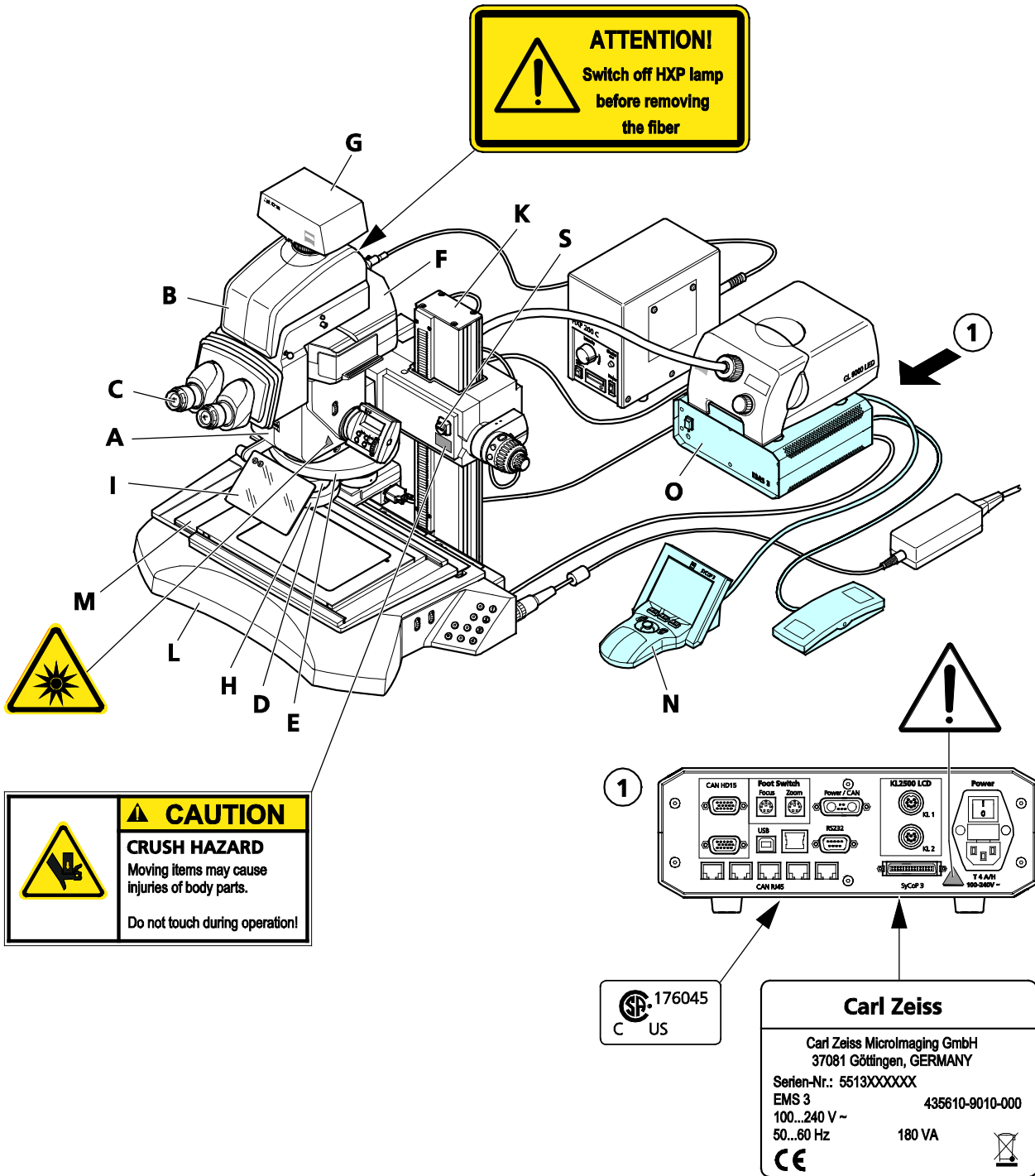


Fig. 2 Axio Zoom.V16 Microscope System (Equipment Example), Warning and Information Labels Attached to the System

Legend to Fig. 2:

- A** Microscope body (Axio Zoom.V16) with control unit (HIP)
- B** Binocular phototube
- C** Eyepiece
- D** Objective
- E** Nosepiece
- F** Intermediate tube (Fluar-Illuminator Z mot.)
- G** Camera adapter with microscope camera (AxioCam)
- H** Reflected-light illumination (slit-ring illuminator with CL 9000 LED CAN cold-light source)
- I** UV / visual dazzle protection
- K** Stand plate, complete with motorized focusing drive with control unit (MaRC)
- L** Transmitted-light illumination (transillumination top 450 mot.)
- M** Specimen stage (mechanical stage S 150x100 mot., CAN)
- N** SYCOP 3 System Control Panel
- O** EMS 3 Controller with optional footswitch S
- S** STOP button for the instantaneous stop of automatic focusing movements



Use UV / visual dazzle protection (Fig. 2/I). Avoid looking directly into the light. It may result in damage to your eyes and skin.



Optical radiation is emitted. Do not look into the beam. It may be dangerous for your eyes.



The pieces of microscope equipment shown here are examples and may deviate from the actual equipment available.

2.3.2 SteREO Discovery.V12/V20 Stereo Microscope

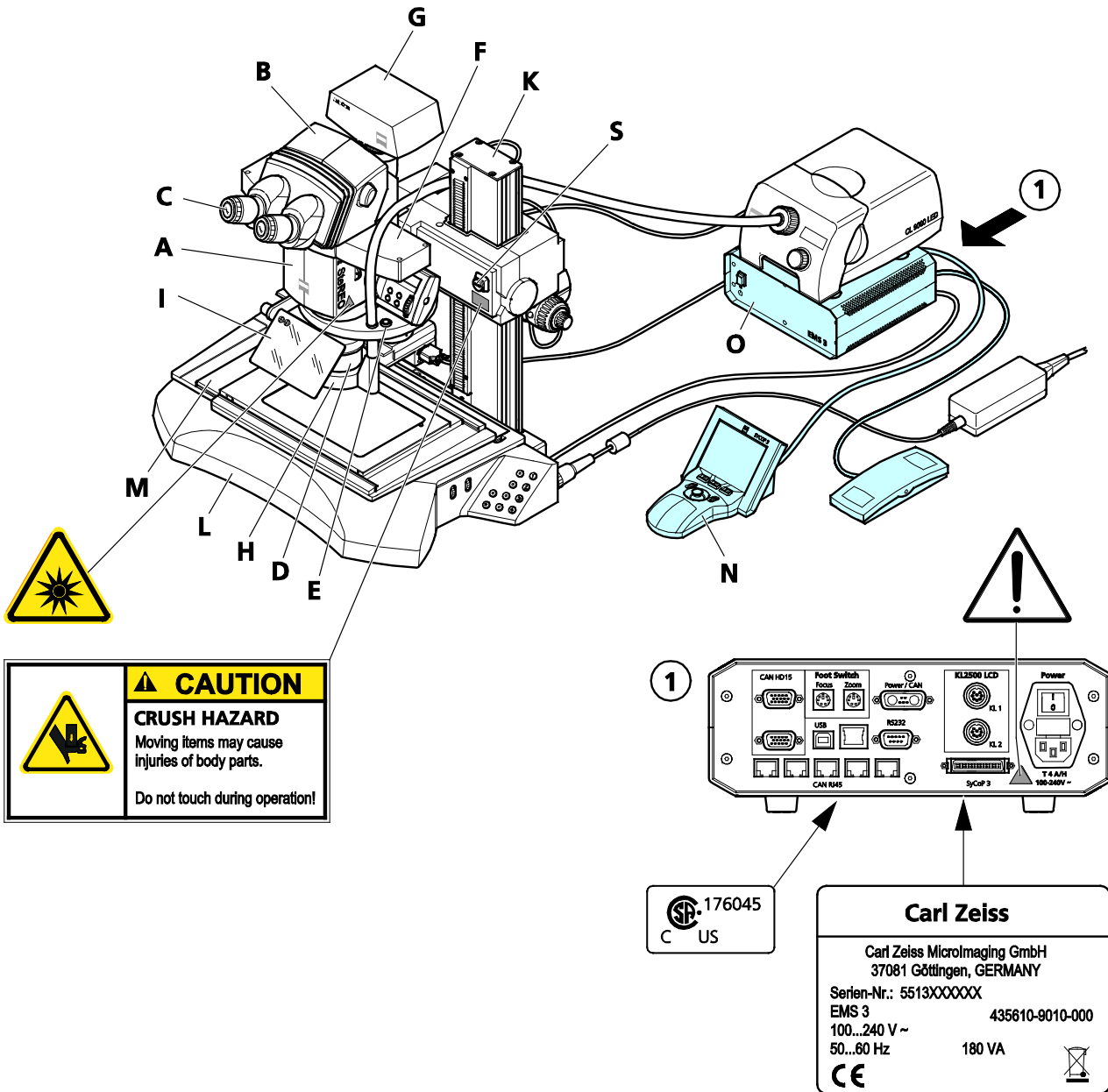


Fig. 3 SteREO Discovery.V12/V20 Microscope System (Equipment Example), Warning and Information Labels Attached to the System

Legend to Fig. 3:

- A** Microscope body (SteREO Discovery.V12/V20) with control unit (HIP)
- B** Binocular phototube
- C** Eyepiece
- D** Objective
- E** Nosepiece
- F** Intermediate tube (LED intermediate tube S)
- G** Camera adapter with microscope camera (AxioCam)
- H** Reflected-light illumination (slit-ring illuminator with CL 9000 LED CAN cold-light source)
- I** UV / visual dazzle protection
- K** Stand plate, complete with motorized focusing drive with control unit (MaRC)
- L** Transmitted-light illumination (transillumination top 450 mot.)
- M** Specimen stage (mechanical stage S 150x100 mot., CAN)
- N** SYCOP 3 System Control Panel
- O** EMS 3 controller with optional footswitch S
- S** STOP button for the instantaneous stop of automatic focusing movements



Use UV / visual dazzle protection (Fig. 3/I). Avoid looking directly into the light. It may result in damage to your eyes and skin.



Optical radiation is emitted. Do not look into the beam. It may be dangerous for your eyes.



The pieces of microscope equipment shown here are examples and may deviate from the actual equipment available.

2.3.3 SteREO Lumar.V12 Stereo Microscope

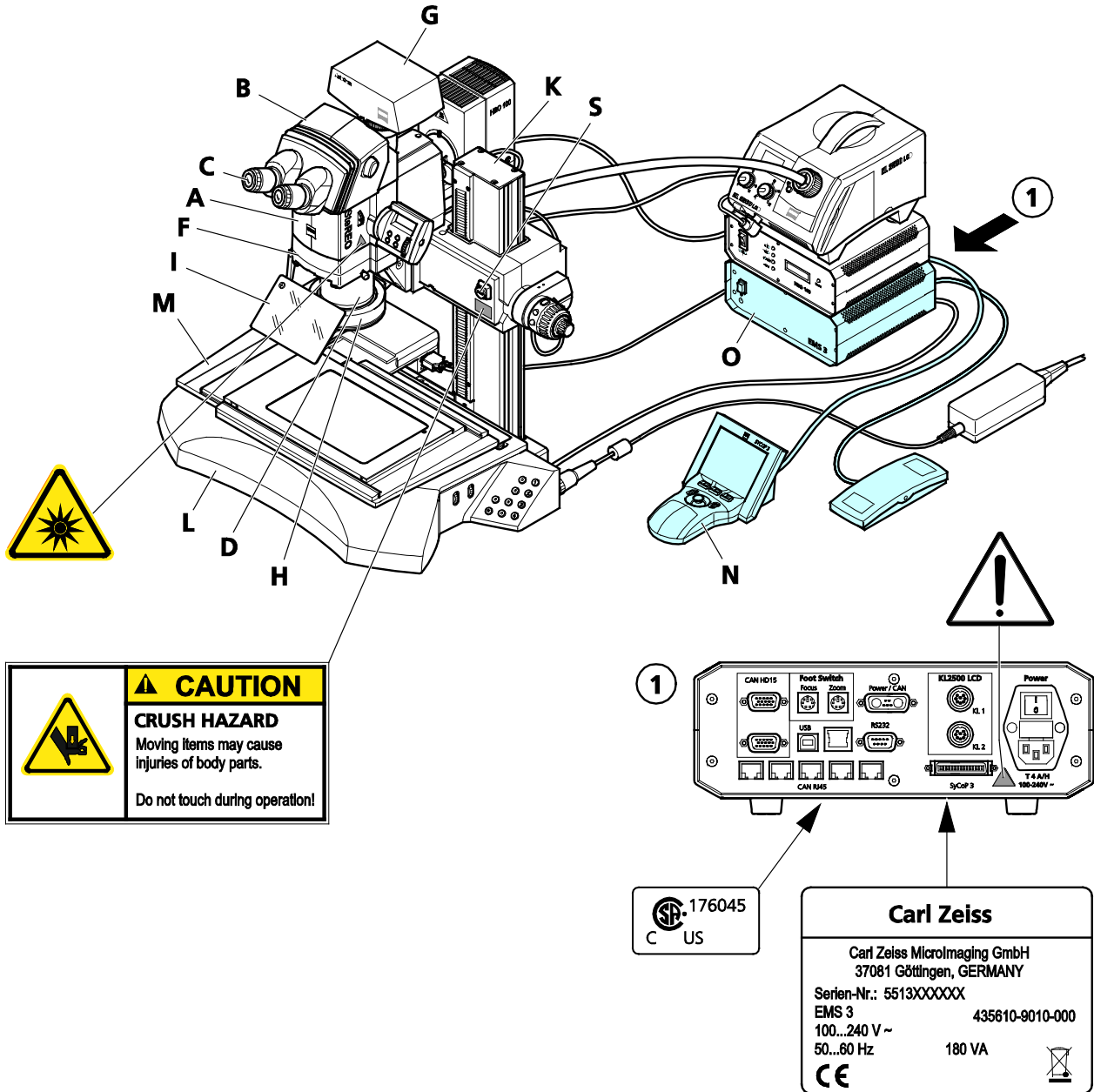


Fig. 4 SteREO Lumar.V12 Microscope System (Equipment Example), Warning and Information Labels Attached to the System

Legend to Fig. 4:

- A** Microscope body (SteREO Lumar.V12) with control unit (HIP)
- B** Binocular phototube
- C** Eyepiece
- D** Objective
- E** Nosepiece
- F** Intermediate tube
- G** Camera adapter with microscope camera (AxioCam)
- H** Reflected-light illumination (slit-ring illuminator with KL 2500 LCD cold-light source)
- I** UV / visual dazzle protection
- K** Stand plate, complete with motorized focusing drive with control unit (MaRC)
- L** Transmitted-light illumination (transillumination top 450 mot.)
- M** Specimen stage (mechanical stage S 150x100 mot., CAN)
- N** SYCOP 3 System Control Panel
- O** EMS 3 controller with optional footswitch S
- S** STOP button for the instantaneous stop of automatic focusing movements



Use UV / visual dazzle protection (Fig. 4/I). Avoid looking directly into the light. It may result in damage to your eyes and skin.



Optical radiation is emitted. Do not look into the beam. It may be dangerous for your eyes.



The pieces of microscope equipment shown here are examples and may deviate from the actual equipment available.

2.3.4 Technical Data**Dimensions and Weight**

| | |
|---|----------------------------------|
| SYCOP 3 (length x depth x height) | 160 mm x 260 mm x 125 mm; 0.6 kg |
| EMS 3 (length x depth x height) | 250 mm x 220 mm x 105 mm; 3 kg |

Power supply

| | |
|---------------|-----------------------------------|
| SYCOP 3 | Via MDR 2x20 cable from EMS 3 |
| EMS 3 | 100 V AC to 240 V AC, 50 Hz/60 Hz |

Operating Data

| | |
|--------------------------------------|---|
| Operating environment | Enclosed spaces |
| Safety class | I |
| Degree of protection | IP 20 |
| Electrical safety | As specified in DIN EN 61010-1 (IEC 61010-1), taking into account CSA and UL regulations |
| Overvoltage category | II |
| Radio interference suppression | As specified in EN 55011 Class A |
| Noise immunity | As specified in DIN EN 61326-1 |
| AC line voltage range | 100 V AC to 240 V AC ± 10 % |
| Line frequency | 50 Hz to 60 Hz |
| Power consumption of EMS 3 | 180 VA |
| Fuse protection of EMS 3 | 2x T 4 A/H 250 V |

Ambient Conditions**Shipping (in Packaging)**

| | |
|---------------------------------------|---------------|
| Permissible ambient temperature | -40 to +70 °C |
|---------------------------------------|---------------|

Storage (in Packaging)

| | |
|---|---------------|
| Permissible ambient temperature | -40 to +70 °C |
| Maximum permissible humidity (without condensation) | 75 % at 35 °C |

Operation

| | |
|---|----------------------|
| Permissible ambient temperature | +5 °C to +35 °C |
| Maximum permissible humidity (without condensation) | 75 % at 35 °C |
| Operating environment | Enclosed spaces |
| Pollution degree | 2 |
| Maximum operating altitude | 2,000 m |
| Atmospheric pressure | 800 hPa to 1,060 hPa |

Optical Risk Group Classification According to DIN EN 62471:2009

Axio Zoom.V16 / SteREO Discovery / SteREO Lumar.V12 microscope system with:

| | |
|-------------------------------------|---|
| HXP 200 C | Risk group 1 according to DIN EN 62471:2009 |
| CL 9000 LED | LED risk group 1 according to DIN EN 62471:2009 |
| Transillumination top 450 mot. | LED risk group 1 according to DIN EN 62471:2009 |
| Transillumination base 300 | LED risk group 1 according to DIN EN 62471:2009 |


Radiating Apertures

Microscope systems with:

| | |
|-------------------------------------|---|
| HXP 200 C, CL 9000 LED | From the objective vertically upward |
| Transillumination top 450 mot. | From transmitted-light attachment vertically upward |
| Transillumination base 300 | From transmitted-light base vertically upward |

3 SETUP


3.1 General Information

 Be sure to read the **Notes on Device Safety** carefully before setting the device up and putting it into operation. (See Section 1.2, Page 8.)

The SYCOP 3 system control panel, the EMS 3 controller, the required tools and optional accessories are supplied in several packages, as is standard commercial practice.

- Take all the units out of the packaging and check the shipment against the delivery note to ensure that it is complete.
- Remove any transport locks (safety screws, adhesive tape or similar).
- Keep the original packaging for any possible longer-term storage or the return of the device to the manufacturer or dispose of the packaging properly.

3.2 Connecting the SYCOP 3 to the EMS 3

 Do not turn on the microscope until all the cables have been connected. (See also Section 3.3, Page 22.)

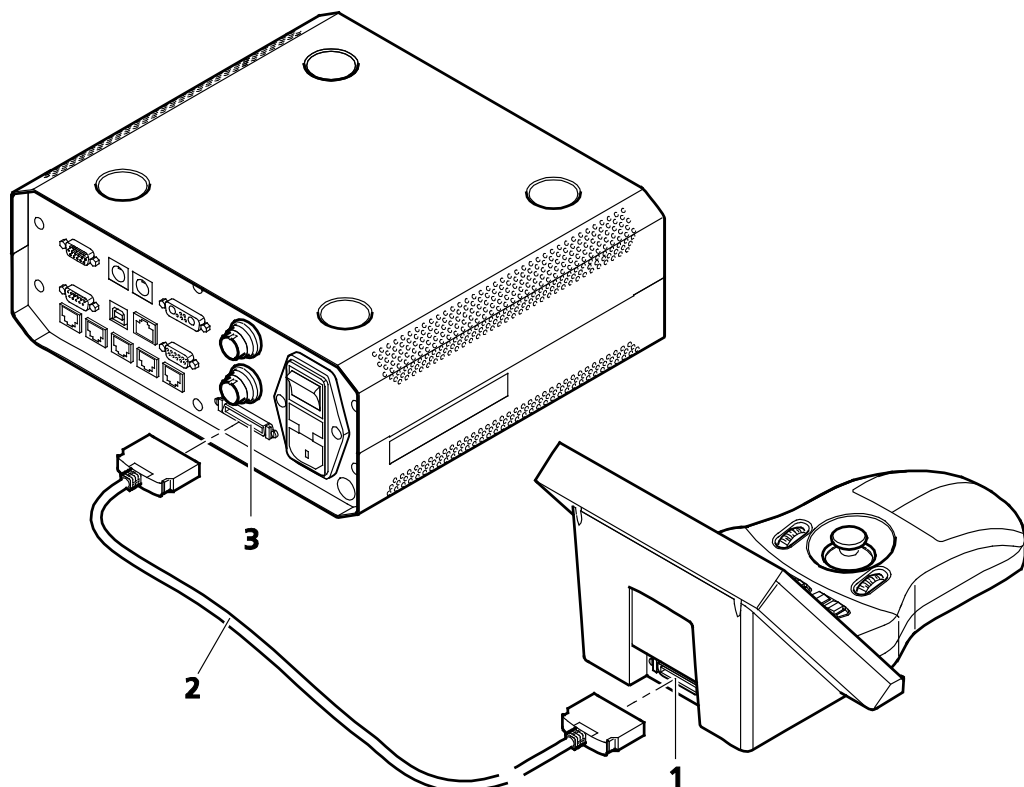



Fig. 5 Connecting the SYCOP 3 to the EMS 3

- Using the MDR 2x20 cable (Fig. 5/2), connect the **SYCOP 3** connector socket (Fig. 5/3) on the back of the EMS 3 controller to the connector socket (Fig. 5/1) on the back of the SYCOP 3 system control panel.

3.3 Connecting the Microscope

 The microscope must have been assembled, as specified in the separate operating manual, with the illuminator units connected to the appropriate light sources by light guides.

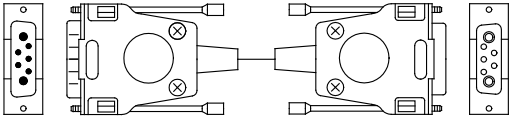


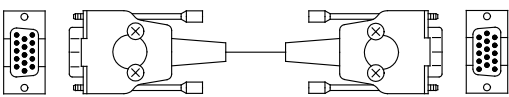
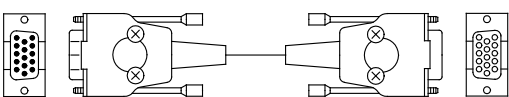

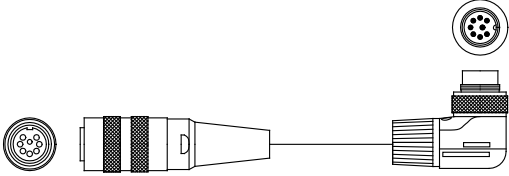
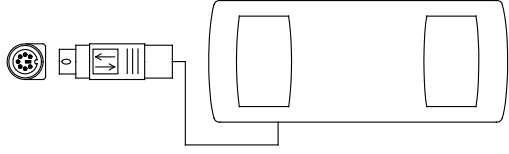
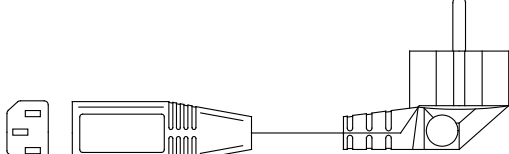
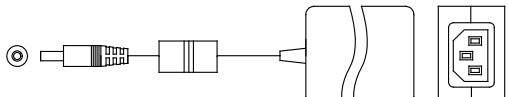
| No. (Fig. 6) | Name / Order No. | Figure | Comment |
|-----------------|---|--|---|
| ① | EMS 3 / CMD focus unit 3 cable 435403-9030-000 |  | Connection between EMS 3 and focus motor |
| ② | MDR 2x20 cable Contained in 435611-9010-000 |  | Connection between EMS 3 and SYCOP 3 |
| ③ | RJ 45 CAN cable Contained in every CAN component |  | Connection between CAN components and/or CAN components and EMS 3 or focus motor 3 L = 500 mm or L = 1,000 mm |
| ④ | HD15 CAN cable 457411-9011-000 Contained in 435716-0000-000) |  | Connection between EMS 3 and HXP 200 C illuminator |
| ⑤ | HD15 CAN extension cable 0500-647 Contained in 435465-9000-000; or 435465-9020-000) |  | Connection between EMS 3 and KT 150x100 mot/mess |
| ⑥ | USB 2.0 cable |  | Connection between EMS 3 and PC |
| ⑦ | Control cable for KL 2500 LCD 435600-8306-000 |  | Connection between EMS 3 and KL 2500 LCD cold-light source |
| ⑧ | Footswitch S 435602-0000-000 |  | For connection to EMS 3 |
| ⑨ | Country-specific power cord |  | Connection to power supply |
| ⑩ | Wide-range power supply unit 24 V, 60 W Contained in 435500-9000-000 |  | Connection of trans-illumination top 450 mot. to power supply |

Table 2 Connection Cables for Microscope Systems

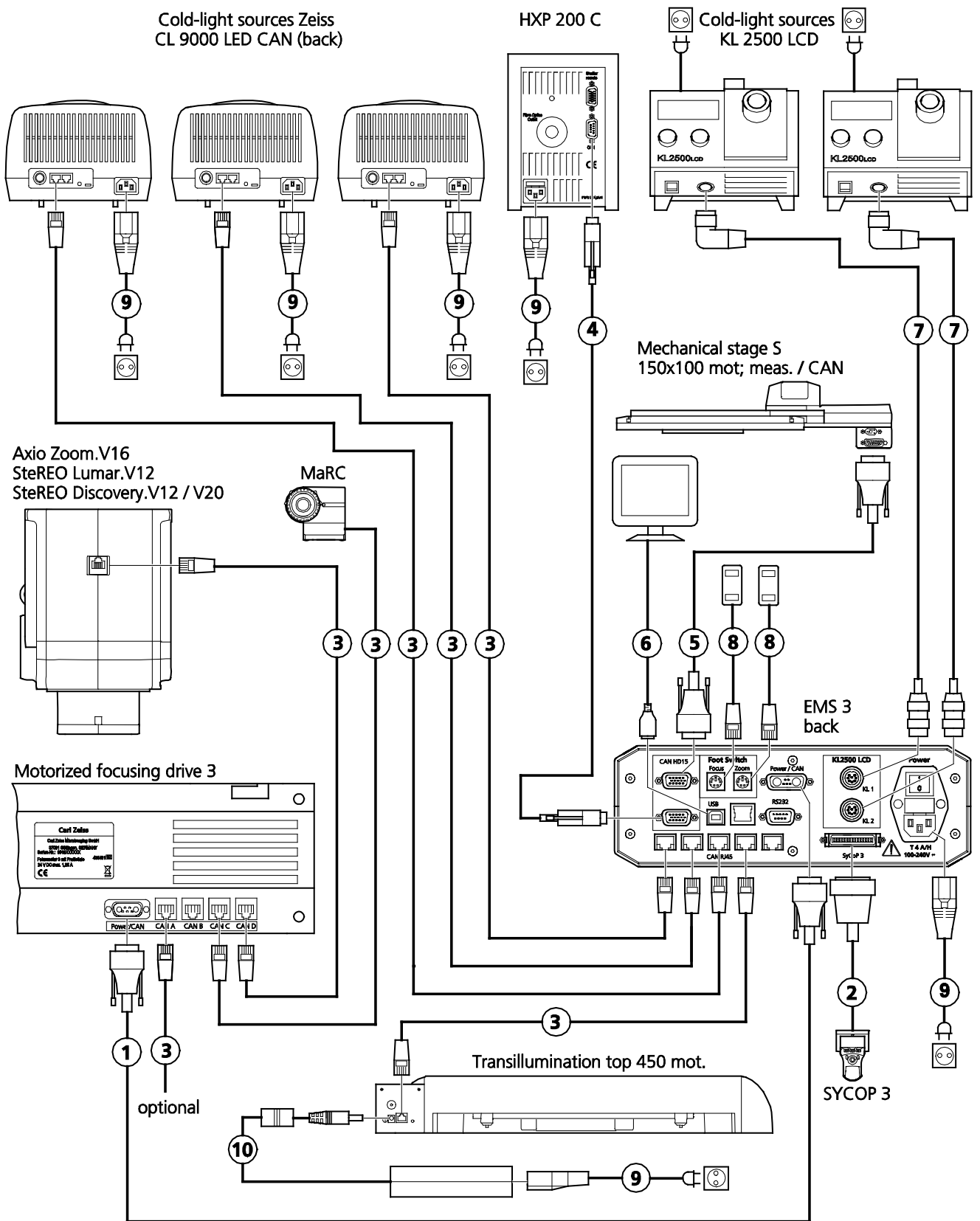




Fig. 6 Connecting the Microscope

3.3.1 Connecting the Motorized Focusing Drive


 On the connecting panel of focusing drives **CAN A** to **CAN D**, connect the RJ45 CAN cables (Fig. 6/3) of the CAN components moved during the focusing operation, such as the microscope body. Components may optionally also be connected to the **CAN RJ45** terminals of the EMS 3 controller.

- Plug the EMS 3/CMD focus unit 3 cable (Fig. 6/1) at the back of focus motor 3 into the **Power/CAN** terminal and secure it with two screws.
- In freely selectable order, connect the CAN components on the focusing drive with **CAN A** to **CAN D**, as shown in Fig. 6:

3.3.2 Connecting the EMS 3 Controller

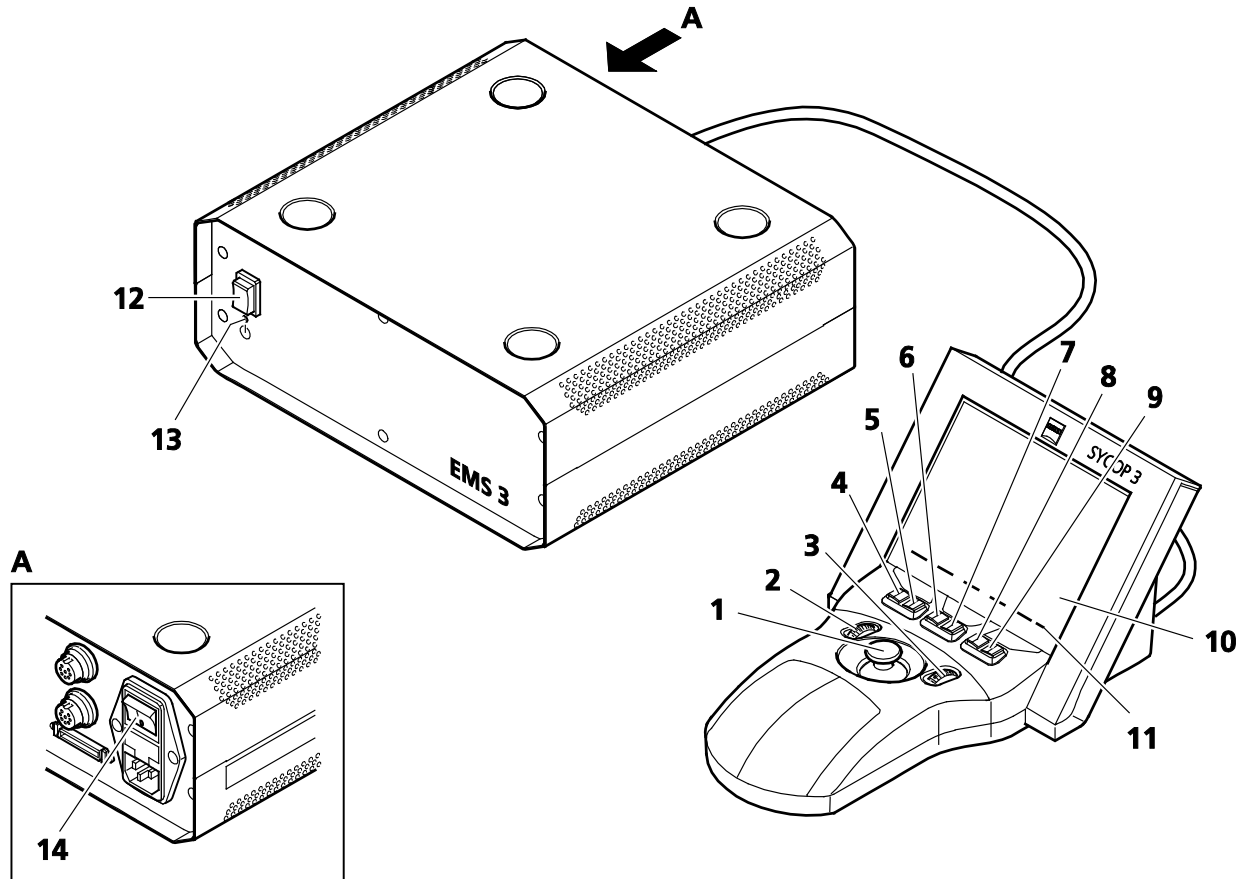
 Make sure that no other CAN power supply unit with an RJ45 port is connected to the system when using the EMS 3 controller.

- At the back of the EMS 3 controller, connect the existing devices, as shown in (Fig. 6).

 The voltage does not have to be switched over on the EMS controller. It adjusts automatically to the existing supply voltage (voltage range: 100 V to 240 V).

4 OPERATION

4.1 Operation and Function Controls on the SYCOP 3 and on the EMS 3



- 1 Joystick
- 2 Scroll wheel
- 3 Scroll wheel
- 4 Pushbutton
- 5 Pushbutton
- 6 Pushbutton
- 7 Pushbutton
- 8 Pushbutton
- 9 Pushbutton
- 10 Touchscreen
- 11 Display line
- 12 ⏻ Button (Standby)
- 13 Pilot lamp
- 14 **Power** switch (I/O)

Fig. 7 Operation and Function Controls on the SYCOP 3 and the EMS 3

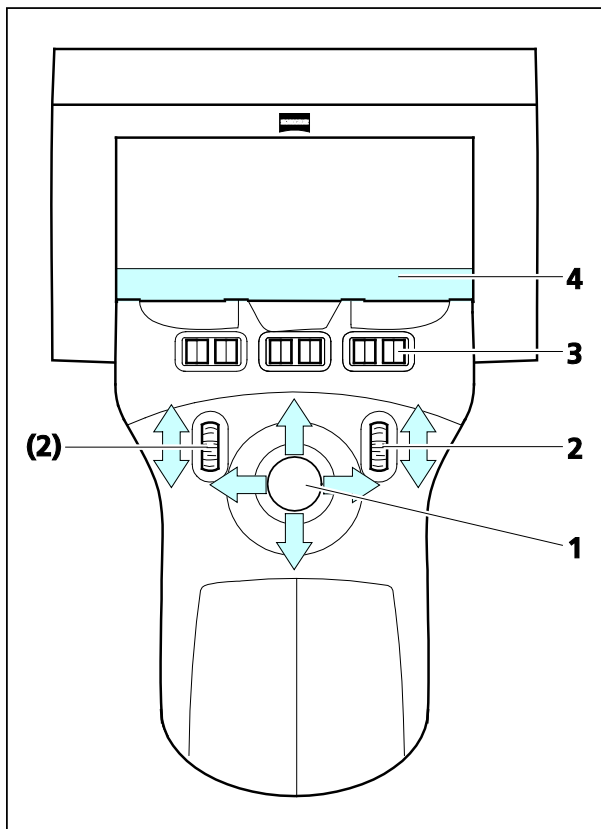


Fig. 8 Overview of Operation Controls on the SYCOP 3

The **SYCOP 3** system control panel combines four controls in one unit:

- Joystick (Fig. 8/1) permitting the two principal functions of the microscope to be controlled in a combined way: zooming and focusing
- Scroll wheels (Fig. 8/2) facilitating the fine focusing of the microscope image in greater magnifications
- Pushbuttons (Fig. 8/3) arranged in six pairs to allow additionally selectable microscope functions to be individually controlled
- Touchscreen (Fig. 8/4) allowing specific microscope functions to be controlled and the overall system to be monitored

The SYCOP 3 has been designed for one-hand operation of the microscope. This allows the operator to use all the principal functions without having to interrupt viewing through the eyepieces.


The SYCOP 3 can be placed to the right or left of the microscope, independent of the location.

The EMS 3 controller is required for the SYCOP 3.

4.1.1 Joystick

In the default setting, the joystick (Fig. 8/1) is used to control the two principal functions of the microscope (zooming and focusing):

| | | |
|---------------------------------------|----------|--|
| – Tilt the joystick <u>left</u> . | Zooming | Reduce zoom magnification. |
| – Tilt the joystick <u>right</u> . | Zooming | Increase zoom magnification. |
| – Tilt the joystick <u>forward</u> . | Focusing | Move the motorized focusing unit upward. |
| – Tilt the joystick <u>backward</u> . | Focusing | Move the motorized focusing unit downward. |

 Slight, careful deflection of the joystick results in fine zooming and focusing movements, while full deflection produces faster zooming and focusing movements.



There is a **risk of fingers getting crushed** in the working area when the motorized focusing drive is lowered:

- If necessary, the focusing drive may be stopped fast in the following way:
 - Press the STOP button.
 - Move the joystick on the SYCOP 3 or the knurled wheel on the HIP upward or downward.
 - Press memory button 1 or 2 on the HIP.
- Do not reach into the working area or under the motorized focusing drive during the lowering operation.
- Adjust the position of the end switch to the lowest position of the focusing drive to avoid damage to the device and/or specimens. (See operating manual for the microscope.)
- Use the specimen protection function to avoid damage to the specimen. (See Section 4.10.2.2, Page 60.)

Whenever one of the two motorized mechanical or measuring stages intended to be used is connected to the system, the stage may additionally be moved in X or Y direction by the joystick. If you wish to switch from microscope control (zooming and focusing) to stage control and back, briefly press the joystick.

| | |
|---------------------------------------|------------------------------|
| – Tilt the joystick <i>left</i> . | Stage moves in –X direction. |
| – Tilt the joystick <i>right</i> . | Stage moves in +X direction. |
| – Tilt the joystick <i>forward</i> . | Stage moves in +Y direction. |
| – Tilt the joystick <i>backward</i> . | Stage moves in –Y direction. |



Slight, careful deflection of the joystick will result in fine stage movements, while full deflection will produce faster stage movements.

4.1.2 Scroll Wheels

In the default setting, the two scroll wheels (Fig. 8/2) are used for fine focusing.

| | | |
|---|---------------|---|
| – Turn the left or right scroll wheel <i>forward</i> . | Fine focusing | Moves the motorized focusing unit upward. |
| – Turn the left or right scroll wheel <i>backward</i> . | Fine focusing | Moves the motorized focusing unit downward. |

Whenever one of the two motorized mechanical or measuring stages intended to be used is connected to the system, the scroll wheels permit additional fine movement of the stage in X or Y direction. If you wish to switch from fine focusing to stage control and back, briefly press one of the two scroll wheels.

| | |
|---|--|
| – Turn the left scroll wheel <i>forward</i> . | Fine movement of the stage in –X direction |
| – Turn the left scroll wheel <i>backward</i> . | Fine movement of the stage in +X direction |
| – Turn the right scroll wheel <i>forward</i> . | Fine movement of the stage in +Y direction |
| – Turn the right scroll wheel <i>backward</i> . | Fine movement of the stage in –Y direction |

4.1.3 Pushbuttons

Further different microscope functions can be controlled with the three pairs of pushbuttons (Fig. 8/3). These need to be configured accordingly beforehand. (See Section 4.10.3.1, Page 65.)

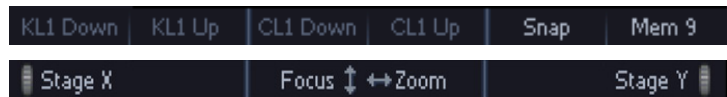
4.1.4 Touchscreen

Aside from controlling selected microscope functions, the touchscreen (Fig. 8/4) also serves to display all the microscope settings and parameters required.


The display line on the lower edge of the touchscreen shows the current assignment of such control elements as the joystick, the scroll wheels or the pushbuttons.

- If this display line is briefly touched, the following will be shown or hidden:


- the functions of the pushbuttons
- the functions of the joystick and scroll wheels.




4.2 Switching the Microscope System on

 Check that the microscope system has been correctly set up and connected, with all transport locks properly removed.



- Switch on all the light sources and illuminators existing in the system. In so doing, follow the separate operating instructions of each device.

 Before switching the device on, check that the joystick on the SYCOP 3 is in zero position and that the footswitch, if any, is freely accessible.

- Set the **Power** switch at the back of the EMS 3 controller to position **I**. If necessary, briefly press the  button (standby) on the front of the EMS 3 controller.

The system will be switched on and will initialize (Fig. 9).

If a motorized stage is connected, a stage initialization query will appear (Fig. 10).

- If the  button is pressed, initialization will be performed immediately.
- If the  button is pressed, initialization will be stopped and may be carried out later. (See Section 4.9.1.3, Page 38.)

When the initialization is completed, the **Home** home page (Fig. 11) will appear.

The system is ready for subsequent configuration.

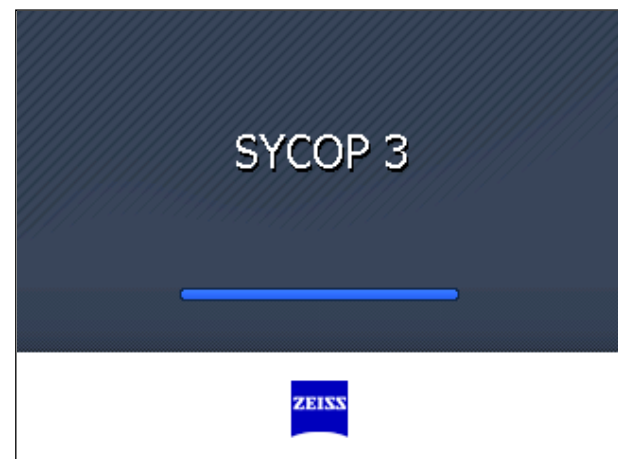


Fig. 9 Initialization Screen on the Touchscreen

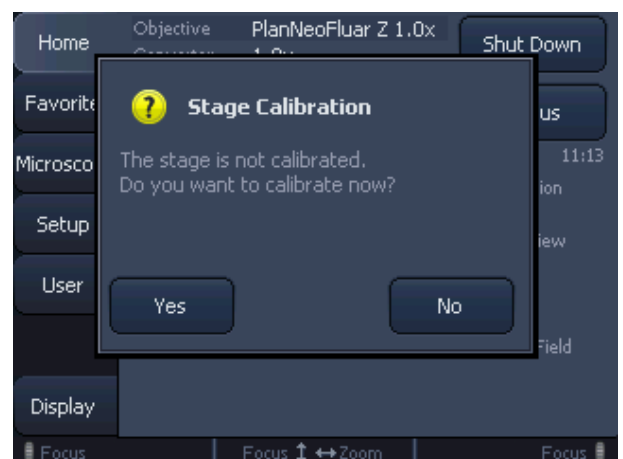


Fig. 10 Stage Initialization Query Window

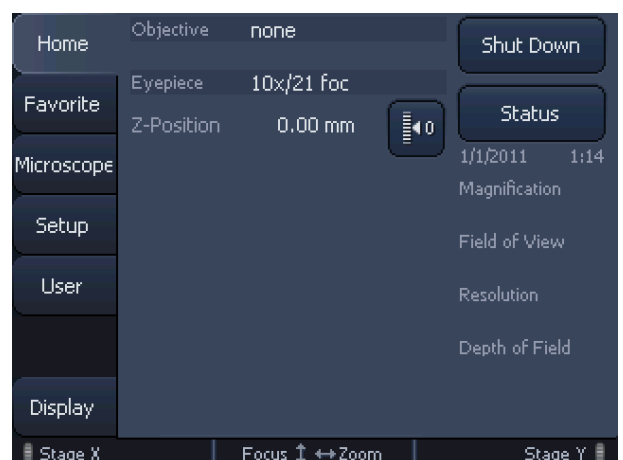


Fig. 11 'Home' Home Page (System Unconfigured)

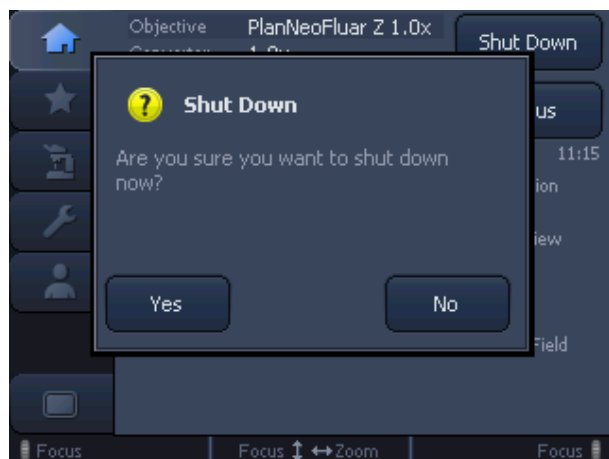


Fig. 12 Shut Down Safety Query Window

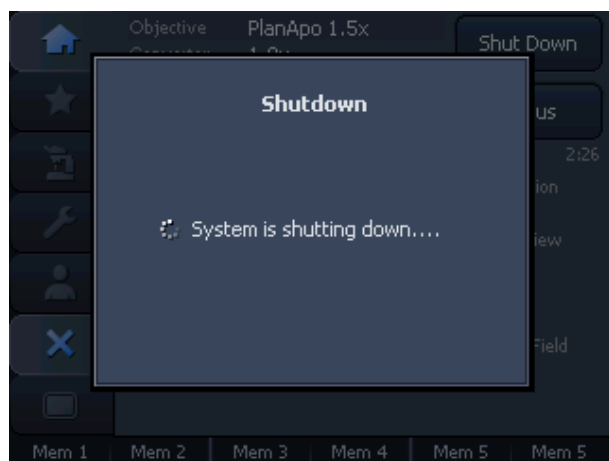


Fig. 13 Shutdown Window

4.3 Switching the Microscope System off

- Press the **Shut Down** button in the **Home** home page on the touchscreen.

When the safety query is answered by pressing the **Yes** button (Fig. 12), the system, including light sources and illuminators, will be shut down (Fig. 13). It will then be in the standby mode.

- Set the **Power** switch at the back of the EMS 3 controller to position **O**. The system will be switched off completely.
- Then switch off light sources and illuminators separately.

4.4 Screen Layout

The touchscreen performs two basic tasks:

- Display of information
- Control of selected functions

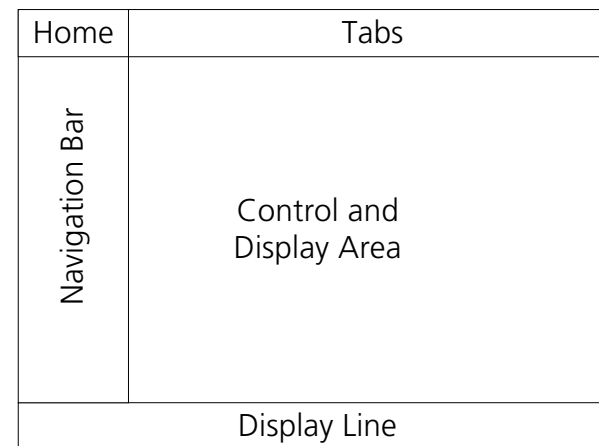


Fig. 14 Areas of the Screen

The screen is divided into the following areas (Fig. 14):

4.4.1 Navigation Bar

Using the navigation bar, the following main menus can be called up from the **Home** home page: **Favorites, Microscope, Setup, User** and **Display**.

Any submenus that may exist will be displayed in a second column.

4.4.2 Control and Display Area

It is in this area that the microscope and its components are operated and configured and the selected or set system parameters are displayed.

4.4.3 Tabs

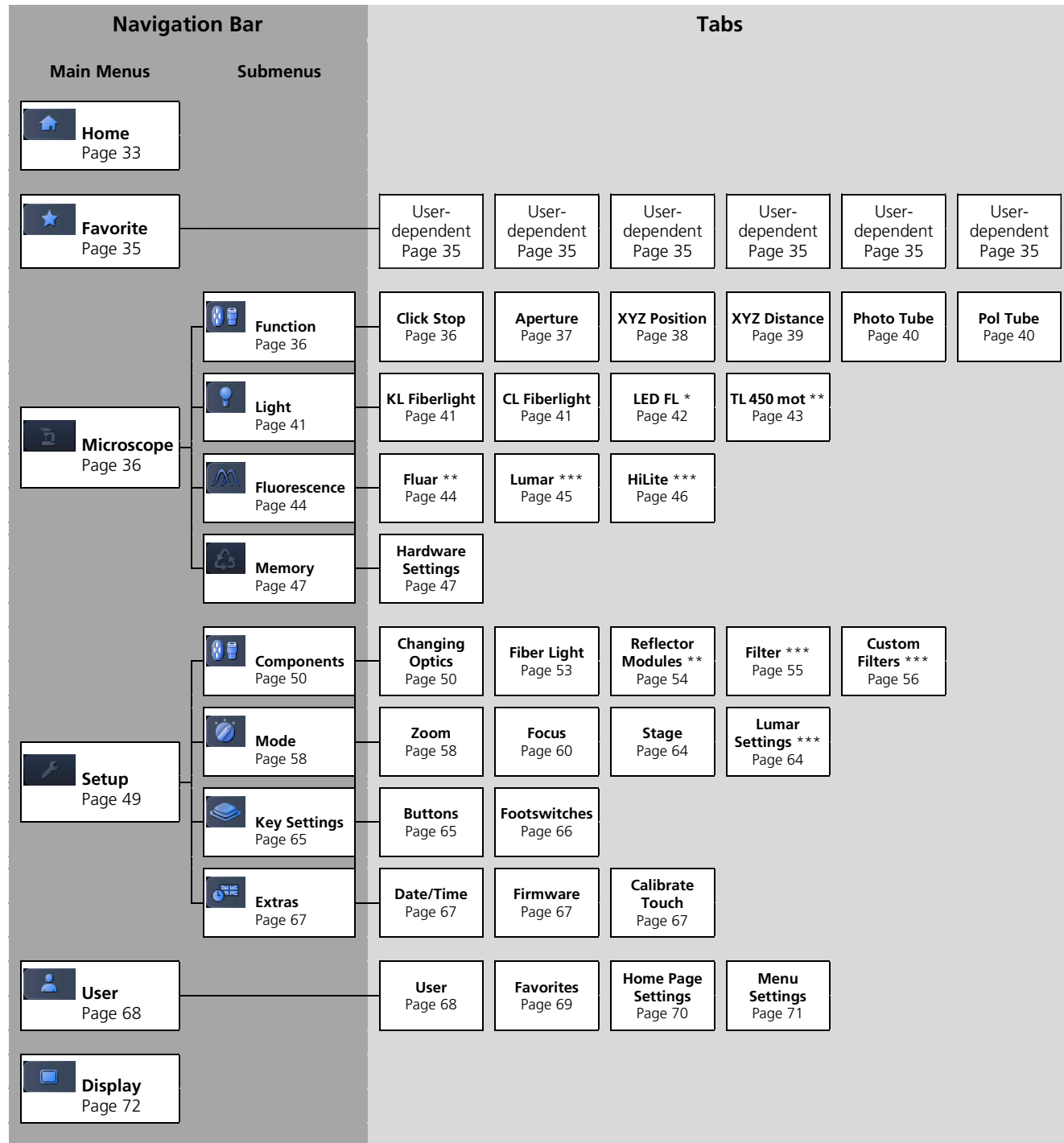
Further dialogs are accessible in main menus and/or submenus via a maximum of six tabs arranged along the upper edge of the screen. The **Home** home page has no tabs.

4.4.4 Display Line

The display line on the lower edge of the screen provides information on the functions currently assigned to the mechanical control elements of the SYCOP 3 (joystick, pushbuttons, scroll wheels) and is always visible.

When you press the display line briefly, either the functions currently assigned to the joystick and scroll wheels or to the three pairs of pushbuttons will be shown. (See also Section 4.1, Fig. 8, Page 26.)

4.6 Menu Overview



* For SteREO Discovery.V12/V20 only
 ** For Axio Zoom.V16 only
 *** For SteREO Lumar.V12 only

Fig. 15 Menu Overview

4.5 Overview of the Control Elements Accessible via the Touchscreen

| Control Element | Designation | Explanations |
|-----------------|---|---|
| | Button | Option button for two modes: active (highlighted in blue) or not active |
| | Button with status field | Option switch with status field . It signals whether the function is active (lit up blue) or not active. |
| | Button | Switches the system off. (System is shut down.) |
| | Button | Sets active Z-position to zero. (Any Z-positions previously saved will be preserved.) |
| | Button | Storage and call-up of settings |
| | Controller / switch | Setting of parameters by pressing and holding the or buttons Single click on bar: ON ; double click: OFF |
| | Display button and button for configuration | Button with action switch to call up a dialog for a change of settings |
| | Scroll bar | For paging up and down in the menu screen |
| | Keypad | For entering text or numbers in edit fields |
| | STOP button | Allows the movement of the focusing drive to be interrupted instantaneously. |

Table 3 Control Elements of the Touchscreen

4.7 'Home' Home Page

After the SYCOP 3 has been switched on with subsequent initialization, the **Home** home page will appear on the touchscreen.

The navigation bar allows you to call up all the main menus and submenus and the tabs assigned to them. You can always return to the home page via **Home**.

The operation and display area shows the current status of the microscope system


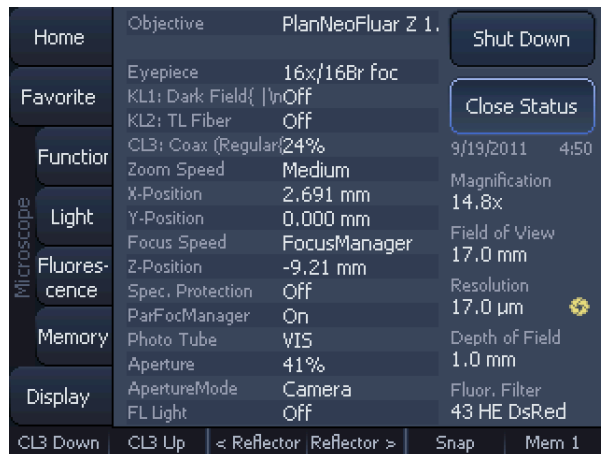
- The objective currently in use (**Objective**)
- The eyepieces currently in use (**Eyepiece**)
- Current **Z-Position** (focus position) with a button for setting the current Z-Position to zero
- Optional: Elements for controlling the cold-light sources configured (See also Section 4.11.3, Page 70.)
- **Shut Down** button for switching the microscope system off
- **Status** button for switching from short status to long status and back
- Short status showing:
 - Date, time
 - The magnification factor in the eyepiece (**Magnification**)
 - The diameter of the object field (**Field of View**)
 - **Resolution**
 symbolizes that the aperture diaphragm is not completely opened, so that maximum resolution cannot be achieved.
 - **Depth of field**
 - Optional: Activated fluorescence filter



Fig. 16 'Home' Home Page with Short Status Indication



After the **Status** button has been pressed, the long status will appear on the touchscreen. It contains information on the status of all motorized and/or coded microscope components connected or on the parameter settings selected (Fig. 17).

You can close the long status screen by pressing **Close Status**.

Fig. 17 'Home' Home Page with Long Status Indications

| Description | Active Mode | Comment |
|---------------------|--------------|---|
| KL1: Dark Field | Off | Reflected light dark field illumination deactivated |
| KL2: TL Fieber | Off | Transmitted-light illumination deactivated |
| CL3: Coax (Regular) | 24% | Coaxial reflected light illumination activated, lowered to a brightness of 24 % |
| Zoom Speed | Medium | Medium zoom speed activated |
| X-Position | 2.691 mm | Value of current X-position |
| Y-Position | 0.000 mm | Value of current Y-position |
| Focus Speed | FocusManager | Focus speed dependent on total magnification, faster focusing at lower magnifications, gentle focusing at higher magnifications |
| Z-Position | -9.21 mm | Value of current Z-position |
| Spec. Protection | Off | Electronic specimen protection not activated |
| ParFocManager | On | Automatic focusing activated when objectives not parfocalized are changed on the nosepiece |
| Photo Tube | DOC | Microscope image diverted to camera |
| Aperture | 41% | Microscope image dimmed, with aperture diaphragm opened to 41 % |
| ApertureMode | Camera | Aperture or "camera" zoom mode activated, constant image brightness during zooming for the camera connected |
| FL Light | Off | Fluorescence illumination deactivated or shutter closed |

Table 4 Parameters Displayed on the Long Status Screen

4.8 'Favorite' Main Menu

Menu call-up:
Home\Favorite

The **Favorite** main menu allows up to six microscope functions to be put together in a user-oriented way for fast access.

If no favorites have been configured yet when **Favorite** is called up, the user is automatically directed to configuration in the **User** main menu (Fig. 18).

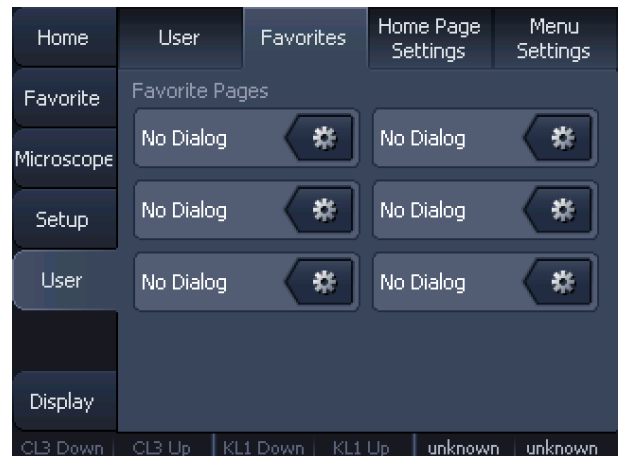


Fig. 18 Favorites Configuration Screen

Each user may perform the configuration according to his / her individual needs.

- If you wish to accept (or change) a function in **Favorites**, press the desired button to open the **Select Favorite Dialog** (Fig. 18).
- Use the scroll bar to select the desired function and then press **OK** (Fig. 19).



Fig. 19 Aperture Selection Function

This completes, for instance, the configuration of the **Aperture** function under **Favorite**, so that this function will be visible now as a tab (Fig. 20).

Any favorites already configured will be shown immediately when Favorite is called up.

To configure / change favorites:
Home\User\Favorites

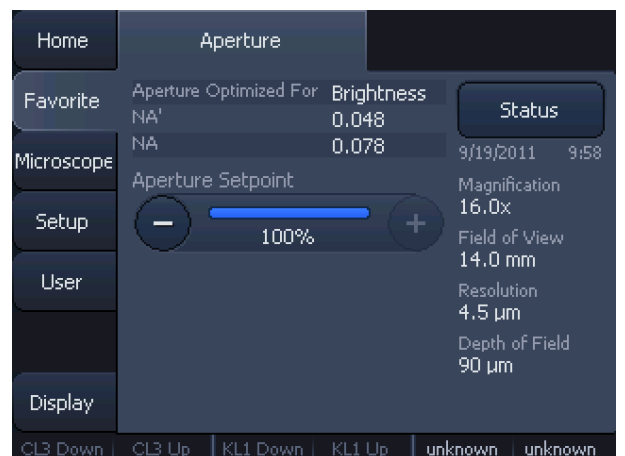


Fig. 20 'Favorite' Main Menu with Aperture Function Configured

4.9 'Microscope' Main Menu

Menu call-up:

Home\Microscope

The **Microscope** main menu serves to control the microscope functions selected.

| Submenu | Tab | Comment |
|---------------------|--------------------------|--|
| Function | Clickstop | Offers set magnification depending on the optical configuration of the system. |
| | Aperture | Options for setting the aperture diaphragm of the microscope body (for Axio Zoom.V16 only) |
| | XYZ Position | Travel to and storage of selected areas of the specimen |
| | XYZ Distance | Measurement of distances in plane and space |
| | Photo Tube | Shift between DOC / VIS and camera triggering |
| | Pol Tube | Activation and deactivation of a polarization filter |
| Light | KL Fiberlight | Light control of KL components (halogen) |
| | CL Fiberlight | Light control of CL components (LED) |
| | LED FL | Light control of FL S LED intermediate tubes (for SteREO Discovery only) |
| | TL 450 mot | Operation of motorized transmitted-light equipment |
| Fluorescence | Fluar | Operation of fluorescence illumination (Axio Zoom.V16 only) |
| | Lumar | Operation of fluorescence illumination (SteREO Lumar.V12 only) |
| | HiLite | Operation of excitation light zoom (SteREO Lumar.V12 only) |
| Memory | Hardware Settings | Storage and call-up of preselected microscope settings |

Table 5 Overview of 'Microscope' Main Menu

4.9.1 'Function' Submenu

4.9.1.1 Click Stop Tab

Menu call-up:

Home\Microscope\Function\Click Stop

The panel shows a number of selected preset magnifications as a function of the active optical configuration.

- Press the button showing the desired magnification (e. g., **32.0x**) (Fig. 21).

This magnification will be set automatically. The button indicating the standard magnification currently selected will be shown with a blue border around it.



Fig. 21 Control Panel Showing Preset Magnifications

4.9.1.2 Aperture Tab

Menu call-up:

Home\Microscope\Function\Aperture

This tab contains the controller which allows the selected zoom mode to be set in accordance with individual needs.

For the selection of the zoom mode, see Section 4.10.2.1, Page 58.

The zoom mode currently chosen is shown above the controller with the current values of the numerical aperture on the specimen side (NA) and image side (NA').

Brightness zoom mode (Fig. 22):

Zooming at maximum brightness (resolution) over the entire range

Recommend for fluorescence applications, for example.

The controller allows the microscope image to be dimmed to as little as 37 % in every zoom position (increase in depth of field).

Eyepiece zoom mode (Fig. 23):

Zooming from overview magnification with a high depth of field to high-resolution detail magnifications

Recommend for eyepiece viewing in the bright field, for example.

The controller allows you to determine, within the zoom range, the magnification up to which observation should be possible with maximum depth of field, in accordance with your individual needs.

Camera zoom mode (Fig. 24):

Zooming at constant image brightness over the entire range

Recommended for image documentation.

The controller allows the numerical aperture NA' on the image side to be adapted to the resolution capacity of the camera used. Any surplus resolution that the microscope may have vis-à-vis the camera can thus be converted into additional depth of field in the microscope image shown on the monitor.



Any reduction in the aperture diaphragm will result in an increase in the depth of field, with resolution decreasing, however.



Fig. 22 Brightness Zoom Mode



Fig. 23 Eyepiece Zoom Mode



Fig. 24 Camera Zoom Mode

4.9.1.3 XYZ Position Tab

Menu call-up:

Home\Microscope\Function\XYZ Position

The **Z-Position** and **XY-Position** areas of this tab show the current Z- and XY-positions.

Both displays can be set to zero (**man** button).

Three XY-positions, including the Z-position if the user so chooses, can be saved in the **Position** area and then be moved to directly by pressing the corresponding button.



Fig. 25 XY- and Z-Positions



Fig. 26 Setting XY- and Z-Positions to Zero and Saving Them

Setting the XY- and Z-Positions to Zero

- Move the microscope to the desired area of the specimen in XY- and Z-directions (Fig. 25).
- Press the **man** button in the **Set Zero** area to set this position to zero as start point (Fig. 26).

Saving Areas of a Specimen


Three different areas of a specimen can be saved (with or without Z-position).

- Save the area of the specimen by pressing one of the three buttons at the bottom of the screen and keep that button pressed until you hear an acknowledgment tone.



If the Z-position is to be saved as well, the **incl. Z** button must have been activated prior to the saving operation. Otherwise, save it again by pressing the button once more.



If the symbol  appears in the **XY-Position** area, the end position of the microscope stage has been reached in X or Y direction.

Moving to Saved Specimen Area

- Briefly press the button of the saved position (Fig. 25).

The microscope will automatically move to that position. Once the position has been set, the button will be shown with a blue border around it.

Calibrating the Stage

- Press the **auto** button in the **XY-Position** area (Fig. 26).
- If necessary, remove the specimen from the stage and confirm the warning by pressing **OK** (Fig. 27).

The stage will be automatically calibrated.



Fig. 27 Confirming Stage Calibration

4.9.1.4 XYZ Distance Tab

Menu call-up:

Home\Microscope\Function\XYZ Distance

In this tab (upper area), you can measure the distances traveled in the X, Y and Z coordinates, as well as the resulting vectors in plane and space, in relation to a set start position.

Measuring Distances

- Move to the start position for measurement in X, Y and Z.
- Press **Set Start Position** to set this position to zero (Fig. 28).
- Move to the end position in X, Y and Z.

The distances measured will be shown directly at ΔX , ΔY , ΔZ , ΔXY and ΔXYZ (Fig. 29).


 In the lower **Position** area, you can move to the X and Y (Z) positions directly and then save those positions, similarly to the **XYZ Position** tab. (See also Section 4.9.1.3, Page 38.)



Fig. 28 Distance Measurement Start Position



Fig. 29 Distance Measurement End Position



Fig. 30 Screen Showing Buttons for Image Documentation

4.9.1.5 Photo Tube Tab

Menu call-up:

Home\Microscope\Function\Photo Tube

- Press the **DOC** button to switch from eyepiece viewing to camera and back (Fig. 30).
If the status field is highlighted in blue, the light will be transmitted to the camera (DOC).

- Press the **Snap** button to transmit the image to the camera. Then release the camera and switch back to eyepiece viewing.


 This applies only if the system is supported by Carl Zeiss software.



Fig. 31 Screen Showing Buttons for Polarization Contrast

4.9.1.6 Pol Tube Tab

Menu call-up:

Home\Microscope\Function\Pol Tube

- Press the **Analyzer** button to switch from eyepiece viewing to polarization contrast for the camera (Fig. 31).

If the status field is highlighted in blue, the light will be transmitted to the camera (analyzer).



4.9.2 'Light' Submenu

4.9.2.1 KL Fiberlight and CL Fiberlight Tabs


Menu call-up:

Home\Microscope\Light\KL Fiberlight bzw.
Home\Microscope\Light\CL Fiberlight

The **KL Fiberlight** and **CL Fiberlight** tabs serve to control the KL or CL cold-light sources connected.

-  Up to five cold-light sources (3 CL and 2 KL) can be controlled.
-  A maximum of three different light sources may be shown on the home page.

- Press and hold the **-** or **+** button until the desired lamp brightness is achieved for the cold-light source concerned (Fig. 32, Fig. 33).
- Single click on the controller to switch the cold-light source on.
Double click on the controller to switch the cold-light source off.

 If the connected cold-light source has not been configured yet (i.e., the type of illumination has not been selected yet), the message **Not Configured** will appear above the controller. If this is the case, proceed as described in Section 4.10.1.2, Page 53. It will still be possible, however, to control the cold-light source.


 Light sources must always be turned on before the SYCOP 3 is switched on.



Fig. 32 Controlling the Brightness of KL Cold-Light Sources



Fig. 33 CL Cold-Light Source Not Configured

4.9.2.2 LED FL Tab

Menu call-up:


Home\Microscope\Light\LED FL


The **LED FL** tab serves to control the light of up to two different type S LED intermediate tubes on the SteREO Discovery.

In addition, this tab provides spectral data of the excitation filter, beam splitter and emission filter.

Status also shows the active type S LED intermediate tube.

Only one S type LED intermediate tube can be active at any given time, while the second, if existing, will be visible, but cannot be operated (grayed out).

 S type LED intermediate tubes can only be switched on or off on the tube itself with the aid of the pull rod.

 Whenever the two S type LED intermediate tubes are switched on, you will be asked in a pop-up window to turn one of them off by pulling the pull rod (Fig. 34 and Fig. 35).



- Press and hold the  or  button until the desired brightness of the FL excitation light is achieved.



Fig. 34 Screen Showing Two Type S LED Intermediate Tubes

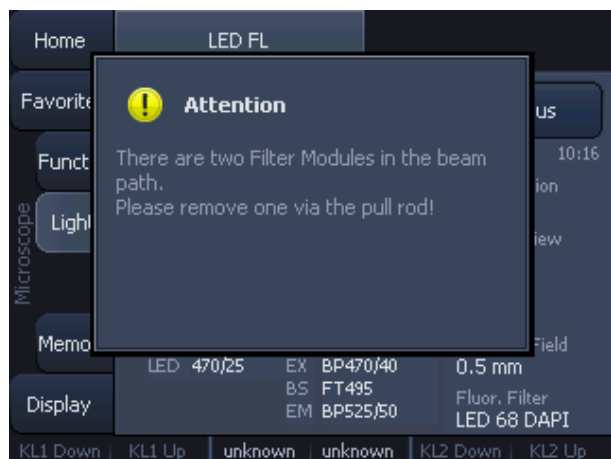


Fig. 35 Pop-up Window Appearing When Two Type S LED Intermediate Tubes Are Switched on at the Same Time

4.9.2.3 TL 450 mot Tab

Menu call-up:

Home\Microscope\Light\TL 450 mot

The **TL 450 mot** tab serves to control transillumination top 450 mot. Apart from light control, this tab also allows you, at the touch of a button, to set, vary and save, if necessary, the following methods of illumination

- **BF** bright field illumination,
- **BF+** bright field illumination with additional contrast enhancement,
- **RC** relief contrast by slanted illumination and
- **DF** one-sided dark field.



Once transmitted-light illumination has been switched on, **Best Mode** will be active.

Of the **BF**, **BF+** and **RC** illumination methods, the method that achieves the best results in terms of contrast and homogeneity will be automatically set, depending on the optic configuration of the microscope. The relevant button will be activated (lit up).

- You can adjust contrast and homogeneity individually, if necessary, by pressing and holding the **-** or **+** button of the **Adjust 1** and **Adjust 2** controllers.
- When **RC** illumination is employed, pressing and holding the **-** or **+** button on the **Adjust** controllers will have this effect:
 - **Adjust 1** possible contrast enhancement,
 - **Adjust 2** possible improvement of illumination homogeneity between the upper and lower edge of the image.
- Customized illumination situations can be saved via the **Memory** submenu. (See Section 4.9.4, Page 47.)



It is recommended that customized illumination situations always be saved together with the associated zoom values.

- You can switch transmitted light on or off by pressing the **Shutter** button.

Shutter active (blue LED is lit up) means that transmitted light has been switched off. Additionally, the transmitted-light outlet is closed with a black diaphragm.

- You can adjust transmitted-light illumination brightness by pressing the **-** or **+** button.



Fig. 36 Screen Showing the TL 450 mot Tab

4.9.3 'Fluorescence' Submenu

Depending on the microscope system, the **Fluorescence** submenu contains the following tabs:

- **Fluar** (Fluar-Illuminator Z mot. on the Axio Zoom.V16)
- **Lumar** (SteREO Lumar.V12 only) and
- **HiLite** (SteREO Lumar.V12 only).



Fig. 37 Controlling the Fluar Illuminator Z mot.

4.9.3.1 Fluar Tab

Menu call-up:

Home\Microscope\Fluorescence\Fluar

The **Fluar** tab controls the movement of the reflector turret and the shutter for fluorescence illumination.



If the reflector turret has not been configured yet, that is, the filter sets contained in the reflector modules are not shown on the buttons in the **Reflector Changer** area, proceed as described in Section 4.10.1.3, Page 54.

- To change the filter set on the reflector turret, press the button showing the desired filter combination (Fig. 37).

The relevant filter set will then be rotated into the light path, with the button showing a blue border around it.

Additionally, a short description of the filter set of the selected position will pop up under the buttons showing the nosepiece positions (e.g., **38 HE Green Fluorescent Prot**).

- Press the **FL Light** button to open or close the shutter for fluorescence illumination.

The shutter will be open when the status field on the button is highlighted in blue.



If the HXP 200 C is connected in the CAN system (EMS 3), the shutter of the light source will be controlled.

- Use the **Field Stop** controller to open or close the diaphragm of the motorized stop slider, as appropriate

4.9.3.2 Lumar Tab

Menu call-up:

Home\Microscope\Fluorescence\Lumar

The **Lumar** tab:

- controls the movement of the filter wheel,
- configures fluorescence filter sets (**Filter**),
- opens and closes the shutter,
- configures the objective.

When the filter wheel is inserted, the fluorescence filter sets are read by the automatic component recognition system (ACR) and assigned to the four buttons.

If filters are not recognized automatically, the filter name needs to be manually assigned, as described below. (See also the analogous function described in Section 4.10.1.4, Page 55.)

Configuring the Filter

- Press the appropriate button until the **Select Filter** list opens (Fig. 39).
- Using the scroll bar, select the installed filter and confirm by pressing **OK**.

The filter position has now been configured.

If a filter, e.g., a customer-specific filter, is not contained in the selection list, this filter needs to be defined and configured separately. (See Section 4.10.1.5, Page 56.)

Changing Filters

- Briefly press the button showing the relevant filter (Fig. 38).

The fluorescence filter set concerned will be rotated into the light path. Additional information will be displayed under the buttons (e.g., **Ex: 450-490, Em: 500-550**).

Configuring the Objective

- Briefly press the button showing the relevant objective (Fig. 38).

The button displaying the current (configured) objective will be shown with a blue border around it (e.g., **ApoLum S 1.2x**).

Opening or Closing the Shutter

- Briefly press the **FL Light** button (Fig. 38).

The shutter will be open when the status field on the button is highlighted in blue.



Fig. 38 Controlling the Filter Wheel and Shutter of the SteREO Lumar.V12



Fig. 39 Selecting the Filter

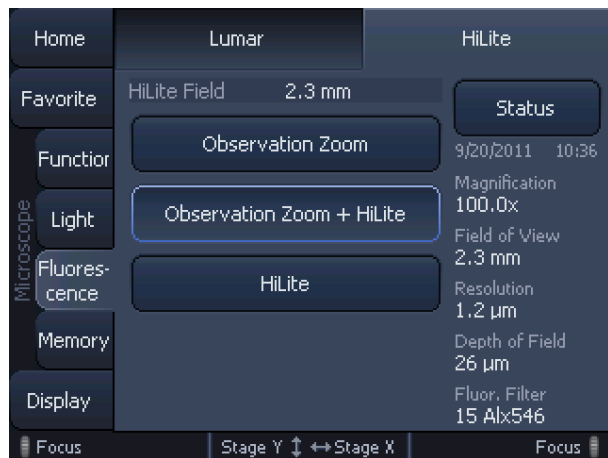


Fig. 40 Selecting the Mode for Observation or Light Zoom

4.9.3.3 HiLite Tab

Menu call-up:

Home\Microscope\Fluorescence\HiLite

The **HiLite** tab allows you to choose from among three different illumination and observation modes (Fig. 40):

- Observation zoom
- HiLite
- Observation zoom + HiLite

Selecting the Observation Mode

- Briefly press the button displaying the relevant mode (Fig. 40).

The button of the mode selected will be shown with a blue border around it.

The diameter of the fluorescence excitation light in the visible specimen field will be displayed above the buttons (e.g., **HiLite Field 2.3 mm**).

Observation Zoom

Only the observation zoom will be active. The specimen field will change as a function of magnification, while the diameter of the illuminated specimen field will remain the same.

HiLite

Only the light zoom (fluorescence excitation light) will be active. As a result, only the illuminated specimen field will change during zooming. The visible specimen field will stay the same. This permits spot illumination or dimming.

Observation Zoom + HiLite

Light and observation zoom will be active at the same time. The illuminated specimen field will be adapted to the visible specimen field over the entire zoom range.

4.9.4 'Memory' Submenu

4.9.4.1 Hardware Settings Tab

Menu call-up:



Home\Microscope\Memory\Hardware Settings

With the aid of the **Hardware Settings** tab, up to ten different user-specific device settings can be saved or called up (Fig. 41).

The following device parameters can be saved:

- Mag
- Aperture
- Aperture Mode Changer
- Zoom Speed
- FL Light
- Focus
- Focus Speed Changer, etc.

Editing the Name of the Button

- Press the desired **Mem 1** button (Fig. 41) until the selection menu appears with which device settings can be saved and names can be assigned to device settings (Fig. 42).
- Press the  button to call up the keypad where the name can be entered (Fig. 43).
- Enter the desired name, e.g., **Muster**, and confirm by pressing .

The keypad will disappear, and the selection menu will be displayed again with the name you have entered (Fig. 44).



Fig. 41 Hardware Settings Screen



Fig. 42 Selection Menu for Saving Device Settings and for Assigning Names to Device Settings

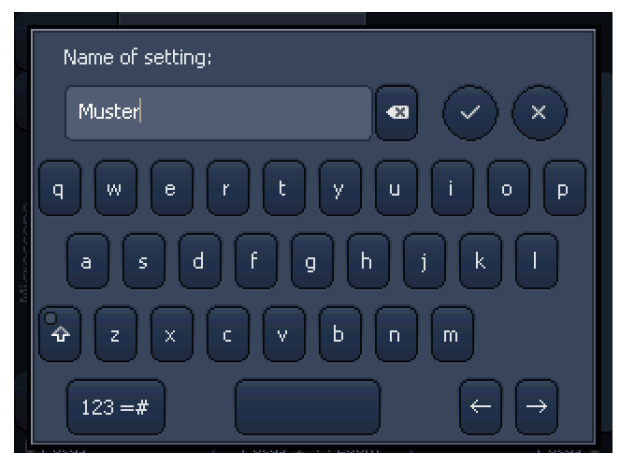




Fig. 43 Editing Names of Device Settings

Selecting and Saving Parameters for Device Settings

- To select the parameters, press the selection box concerned (Fig. 44).
-  You can select or deselect all the parameters by alternately pressing or . If you press , the current device settings will be saved to **Mem**.
- If you press **Save**, your selection will be applied and the selection list closed.

The device setting selected will now be assigned to the **Mem 1 Muster** button and saved (Fig. 45).

Calling up a Saved Device Setting

- To call up the desired device setting, press the relevant button, e.g., **Mem 1 Muster**.
The parameters will be automatically set on the basis of the values saved.



Fig. 44 Selecting Parameters



Fig. 45 Calling up Device Settings

4.10 'Setup' Main Menu

Menu call-up:
Home\Setup

The Setup main menu serves to configure and set up the microscope system.

| Submenu | Tab | Comment |
|---------------------|--------------------------|--|
| Components | Changing Optics | Configuration of objectives and eyepieces |
| | Fiber Light | Configuration of light sources |
| | Reflector Modules | Configuration of reflector modules (for Axio Zoom.V16 only) |
| | Filter | Configuration of Carl Zeiss fluorescence filter sets (SteREO Lumar.V12 only) |
| | Custom Filters | Configuration of customer-specific fluorescence filter sets (SteREO Lumar.V12 only) |
| Mode | Zoom | Configuration of zoom speeds and zoom modes |
| | Focus | Configuration of focusing speeds and focus managers |
| | Stage | Setup of the stage travel direction and compensation between the 2D and 3D modes (SteREO Discovery only) |
| | Lumar Settings | Basic settings of the shutter and reset filter data (SteREO Lumar.V12 only) |
| Key Settings | Buttons | Configuration of the six SYCOP 3 pushbuttons |
| | Footswitches | Configuration of footswitches |
| Extras | Date/Time | Setting of date and time |
| | Firmware | Display of the firmware version currently employed - for internal use |
| | Calibrate Touch | Recalibration of the touchscreen |

Table 6 Overview of 'Setup' Main Menu



Fig. 46 'Changing Optics' Screen as Delivered to the Customer



Fig. 47 Choosing the Eyepiece from the Selection List

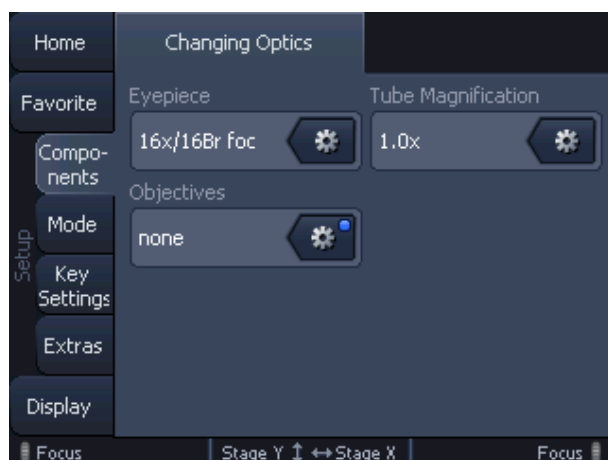


Fig. 48 'Changing Optics' Screen with Eyepieces Configured

4.10.1 'Components' Submenu


4.10.1.1 Changing Optics Tab

Menu call-up:

Home\Setup\Components\Changing Optics

Eyepiece:


When the system is delivered to the customer, the **Eyepiece** button may be preconfigured with a specific component or, if not preconfigured, may show the word **none** (Fig. 46).

- To select the eyepiece type, press the  button. This will open the **Select Eyepiece** list (Fig. 47).
- Use the scroll bar to select the desired eyepiece and then press **OK**.


The dialog window will be closed and the selected type of eyepiece will be shown on the **Eyepiece** button (Fig. 48).

Objectives:

The existing microscope system may be equipped with only one objective or with a two-position objective nosepiece (Axio Zoom.V16 only) or a three-position objective nosepiece (SteREO Discovery.V12/V20 only).

If the system is equipped with a nosepiece, each of the **Objectives** buttons features a status field that shows which of the objectives has been moved into the light path. The  status field on the button of the active objective is highlighted in blue.

When the system is delivered to the customer, the **Objectives** button may be preconfigured or, if this is not the case, may bear the word **none** (Fig. 48).

- To select the objective, press the relevant  button. This will open the **Select Objective** list (Fig. 49).
- Use the scroll bar to select the desired objective and then press **OK**.

The dialog window will be closed and the configured objective will be shown on the **Objectives** button (Fig. 50).



Fig. 49 Choosing the Objective from the Selection List




Fig. 50 Objectives Configured (e.g., for Two-Position Nosepiece)



Fig. 51 Selecting Tube Magnification on the SteREO Lumar.V12

Tube Magnification

Applies to the SteREO Lumar.V12 and SteREO Discovery.V12 or V20 only.

- Press the  button in the **Tube Magnification** area to open the **Select Tube Magnification** list (Fig. 51).
- Select the correct factor and confirm by pressing **OK** (Fig. 52).

The selection list will be closed and the factor chosen will appear on the button.

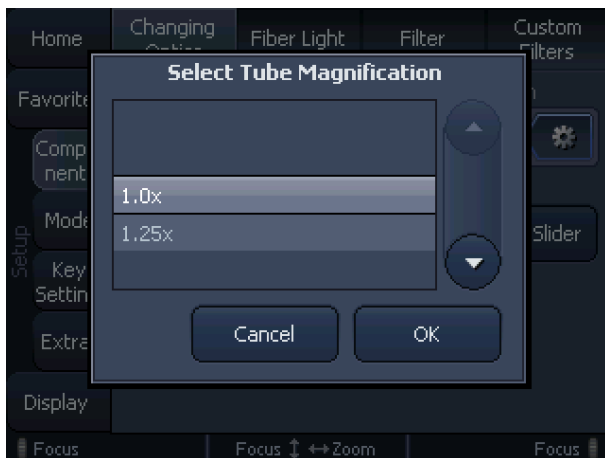


Fig. 52 Select Tube Magnification List



Fig. 53 Screen Showing the Objective Slider Activated

Objective Slider

Applies to the SteREO Lumar.V12 only.

Use the **Objective Slider** button to configure the presence of the objective slider in the system. The objective slider allows selected PlanApo S objectives to be used on the SteREO Lumar.V12.

- Press the **Objective Slider** button to activate this function (Fig. 53).

The status field will then be highlighted in blue and the PlanApo S objectives selection list will appear under **Objectives** for configuration, as described above.


4.10.1.2 Fiber Light Tab

Menu call-up:

Home\Setup\Components\Fiber Light

The **Fiber Light** tab is used to assign identification functions to the cold-light sources integrated in the system, such as Spot Light, Dark Field Ring Light, TL Fiber and Area Light.

Selecting the Illumination Function

- Press the  button of the relevant cold-light source (KL1, KL2 or CL1, CL2, CL3) to open the **Select Lamp Function** list (Fig. 55).
- From the selection list, choose the illumination function intended to be used with this cold-light source and press **OK**.

The dialog window will be closed and the selected illumination function will appear on the button (Fig. 54).

- Follow the same procedures for all the other cold-light sources connected.



Fig. 54 Screen for the Configuration of the Illumination Function



Fig. 55 Illumination Function Selection List

| Selectable Illuminations | Comments |
|---------------------------|--|
| none | For removing an illumination from the system |
| Ring Light | For all bright field ring lights |
| Dark Field Ring Light | For dark field ring lights |
| Ring Light (2D) | For bright field ring lights on the objective nosepiece On the SteREO Discovery, you can additionally distinguish between 2D (axial mode) and 3D (stereo mode). |
| Spot Light | Spot illumination with focusing attachment |
| TL Fiber | Transmitted-light equipment S |
| Line Light | Line light |
| Diffusor | Diffuse reflected light |
| Coax (Diffuse Reflection) | Coaxial reflected-light illumination for specimens having a matte surface |
| Coax (Regular Reflection) | Coaxial reflected-light illumination for specimens having a glossy surface |
| Vertical Illumination | Vertical illumination (SteREO Discovery only) |
| Area Light | Area illuminator |
| Aux Light | For other, customized illuminations |

Table 7 Overview of Selectable Illuminations

4.10.1.3 Reflector Modules Tab

Menu call-up:

Home\Setup\Components\Reflector Modules

Applies to the Axio Zoom.V16 only.

The **Reflector Modules** tab serves to configure the reflector modules installed in the Fluar illuminator Z mot.


 If the Fluar illuminator Z mot. is equipped with reflector modules featuring automatic component recognition (ACR), the filter sets will be read automatically and displayed immediately in the **Reflector Modules** tab. If this is the case, no further configuration will be required.



Fig. 56 Screen for the Configuration of the Reflector Turret

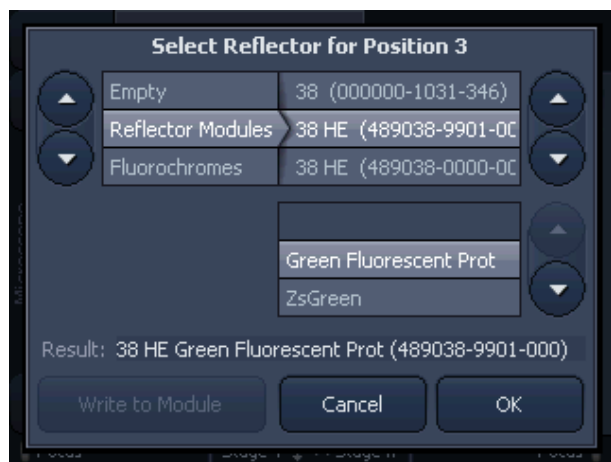



Fig. 57 Reflector Module Selection List


Configuring Reflector Modules

For reflector modules not provided with ACR, for example.

- Press the  button of the relevant reflector position to open the selection list (Fig. 56).
- Choose the reflector module from the selection list and press **OK** (Fig. 57).

The dialog window will be closed and the reflector module will appear on the button (Fig. 56).

- Perform this operation for all the loaded positions of the reflector turret.

The  status field highlighted in blue on the button signals the position which is currently in the light path.

Configuring ACR RW Reflector Modules

- ACR RW reflector modules are shown as "empty" in the modules list.
- The name of the desired module can be picked in the selection list.
- Customer-specific names must be written into this list via the MTB2011 beforehand.
- The **Write to Module** button (Fig. 57) can be used to write the selected name to the reflector module.
- From now on, this reflector module will always be automatically recognized under the programmed name and displayed.


4.10.1.4 Filter Tab


Menu call-up:

Home\Setup\Components\Filter


Applies to the SteREO Lumar.V12 only.

The tab allows you to configure customer-specific filters which have been exchanged, freshly inserted or not been recognized on the filter wheel.

 Filters that have not been recognized can also be configured directly via the **Microscope** main menu, **Fluorescence** submenu, **Lumar** tab. (See Section 4.9.3.2, Page 45.)

 In order for customer-specific filters to appear in the **Select Filter** list, they have to be defined with the help of the **Custom Filters** tab first. (See Section 4.10.1.5, Page 56.)

Configuring the Filter

- Press the  button of the relevant position of the filter wheel (Fig. 58) to open the **Select Filter** list (Fig. 59).

The status field of the position currently in the light path will light in blue.

- Using the scroll bar, select the installed filter and confirm by pressing **OK**.

The filter position is now configured and the button will bear the name of the filter.



Fig. 58 Screen for the Configuration of the Filter Wheel



Fig. 59 Fluorescence Filter Set Selection List

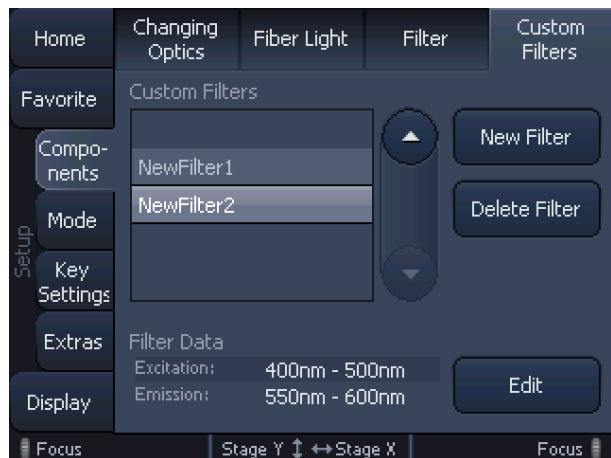


Fig. 60 Defining a Customer-Specific Filter

4.10.1.5 Custom Filters Tab

Menu call-up:

Home\Setup\Components\Custom Filters

Applies to the SteREO Lumar.V12 only.

The **Custom Filters** tab allows you to define customer-specific filters, so that they can appear in the **Select Filter** list and be configured.

The **Custom Filters** selection list shows the customer-specific filters that have already been defined. New filters can be added or those that are no longer needed can be removed. The filter data defined are shown in the **Filter Data** area. Filter data and names can be edited.

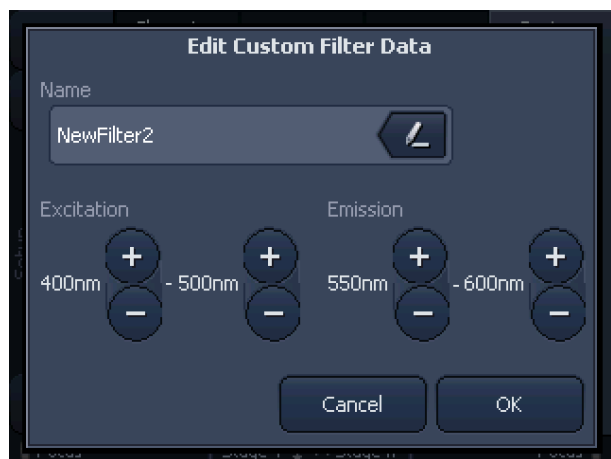




Fig. 61 Editing the Filter Name

Defining Customer-Specific Filters

- Press the **New Filter** button (Fig. 60).
A new filter data set will be created (e.g., **NewFilter2**).
- Press the **Edit** button. The **Edit Custom Filter Data** dialog will open (Fig. 61).
The name of the filter will be shown in the **Name** area and can be edited.
- Press the  button to call up the keypad where the name can be changed (Fig. 62).
- Enter the desired name, e.g., Muster, and confirm by pressing .

The keypad will disappear, and the **Edit Custom Filter Data** dialog will be displayed again (Fig. 63).

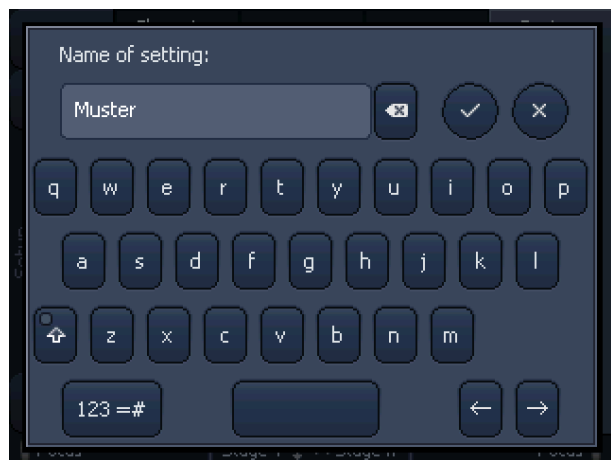


Fig. 62 Entering the Name of the Filter

- Use the **+** and **-** buttons to enter in the **Excitation** or **Emission** area the excitation and emission wavelengths of the filter sets to be edited (Fig. 63).
- Acknowledge the entries by pressing **OK**.

The dialog will be closed and the newly defined filter will be imported into the **Custom Filters** selection list (Fig. 64).

The new filter set will now also be available in the **Select Filter** list for the configuration of the filter wheel. (See Sections 4.10.1.4 and 4.9.3.2, Pages 55 and 45.)

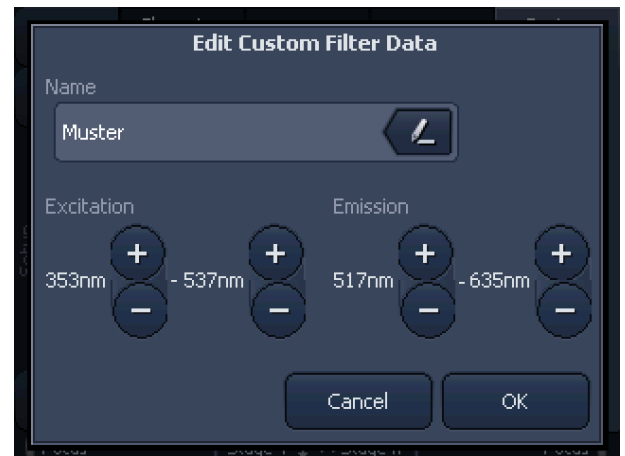


Fig. 63 Editing Filter Data

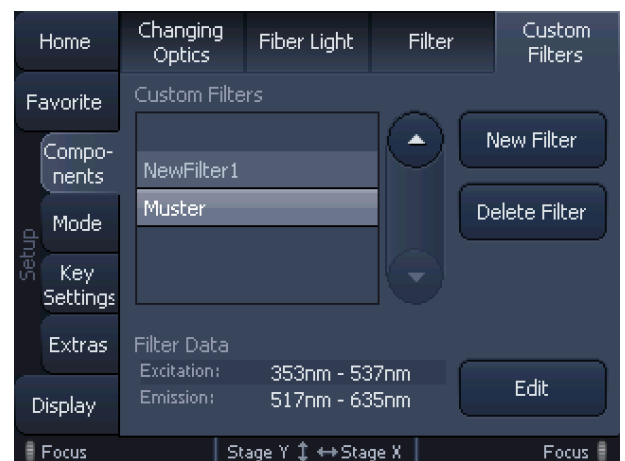


Fig. 64 Custom Filters Selection List with the Newly Defined Filter Set

4.10.2 'Mode' Submenu**4.10.2.1 Zoom Tab**

Menu call-up:

Home\Setup\Mode\Zoom

- Press the relevant button in the **Zoom Speed**, **Zoom Manager** and **Aperture optimized for** areas to select the parameters desired (Fig. 65).

Any parameter activated will be shown with a blue border around it or will be highlighted by the blue status field.

**Fig. 65 Selecting Parameters for Zoom****Zoom Speed**

Three stages can be selected individually for the setting speed of the zoom drive (zoom speed): **Slow**, **Medium** or **Fast**.

The speed of the stage selected will additionally be influenced by the deflection of the joystick / knurled wheel.

- Slight deflection: slow speed
- Full deflection: high speed

Zoom Manager

Compensate Obj. Changes function activated:

- If an objective with a low magnification factor (e.g., 1.0x) in the highest zoom position is replaced by an objective with a higher magnification factor (e.g., 1.5x), the zoom will automatically be reduced until the total magnification last used is ensured with the new objective.
- This applies also to any change from a higher magnification factor objective to a lower magnification factor objective.

Vignetting Free Mode activated:

- Depending on the objective and zoom position, the zoom range will be limited to a vignetting-free image over the usable zoom range.
- This mode can be activated only if the coaxial illumination (Coax) has been configured. (See Section 4.10.1.2, Page 53.)

Aperture optimized for**Brightness** zoom mode

- Zooming at the highest resolution over the entire zoom range (e.g., fluorescence applications)

Eyepiece zoom mode

- High depth of field zooming from the overview into the detail with high resolutions (e.g., spatial specimens)

Camera zoom mode

- Zooming with constant brightness at the camera port over the entire zoom range (e.g., working with a monitor)



Fig. 66 Selecting Focusing Parameters

4.10.2.2 Focus Tab

Menu call-up:

Home\Setup\Mode\Focus

- Press the relevant button in the **Focus Speed**, **Specimen Protection** and **Parfocality Manager** areas to select the parameters desired (Fig. 66).

Before activating the **Parfocality Manager**, be sure to adjust the parfocality of the objectives.

Any parameter activated will be shown with a blue border around it or will be highlighted by the blue status field.

Focus Speed

Several stages can be selected individually as setting speed for the motorized focusing drive: **Slow**, **Medium**, **Fast** or **Focus Manager**.

- Slight deflection: slow speed
- Full deflection: high speed

The **Focus Manager** allows you to control the focusing speed depending on the total magnification set. At a low total magnification, the preset focusing movement will be faster than at a higher total magnification.

In addition to the focusing speed set, **Fine Focus** can be activated. When **Fine Focus** is selected, the focusing speed set will be very slow in order to ensure precise focusing through very small travel movements. The activation of **Fine Focus** will affect the joystick only.

Specimen Protection

The purpose of the electronic specimen protection function is to avoid collisions between the objective and a specimen put on the stage or the objective and the stage.

To activate this function, proceed as follows:

- Put a typical specimen on the stage.
- If you use the objective nosepiece, move in the tallest objective.



Do not reach into the working area or under the motorized focusing drive during the lowering process.

- Move the motorized focusing drive carefully downward until it reaches its lowest position without the specimen being touched.
- Activate the **Specimen Protection** function (Fig. 66) by pressing the button. (The status field will be highlighted in blue.)

By activating this function, you set and permanently save an electronic stop for the lowest focusing position. If this position needs to be changed (because of a different specimen, for example), the procedure has to be repeated or the **Specimen Protection** function deactivated.

When the electronic stop position is reached during the focusing process, two short alarm signals will be sounded and a corresponding warning will appear on the touchscreen (Fig. 67). The motorized focusing drive will stop automatically.



If you need to work below the focus position set, specimen protection can be deactivated by pressing **Yes**. If this is the case, continue focusing very carefully, while making sure that the objective does not touch the specimen.



You can also deactivate this function directly by pressing the **Specimen Protection** button (Fig. 66).

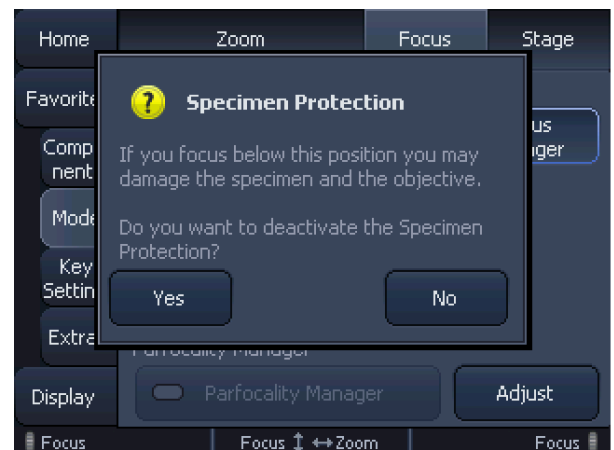


Fig. 67 Deactivating the Specimen Protection Warning



Fig. 68 Parfocality Manager Adjustment Dialog



Fig. 69 Dialog: Parfocality Manager Adjustment and Finish Parfocality Adjustment

Parfocality Manager



The parfocality manager will only be available when an objective nosepiece is used.

When the SYCOP 3 is delivered to the customer, the parfocality manager will always be deactivated.

To adjust the parfocality of the objectives and to activate the parfocality manager, proceed as follows:


- Press the **Adjust** button (Fig. 66) to open the **Parfocality Manager Adjustment** dialog (Fig. 68).
- Rotate the objective with the highest magnification (which will be shown as the reference objective) into the light path and focus it on the specimen placed on the stage.
- Press the **Save Position** button (Fig. 68) to save the focus position of this objective as a reference.
- Rotate in the second objective and focus.
- Press the **Save Position** button (Fig. 69) for this objective to save its focus position.
- Repeat this procedure for the third objective, if applicable.
- Press **OK** to complete the parfocality adjustment of the objectives. The dialog screen will then be closed.
- Activate the **Parfocality Manager** function by pressing the button. The status field will be highlighted in blue (Fig. 70).


When the parfocality manager is activated, the microscope will automatically move to the focus position after a change of objectives. The specimen will thus continue to be in focus.

Whenever the focusing drive needs to be moved downward more than 2 mm during an objective change, a safety query will appear (Fig. 70).

If there is no risk of collision, answer the safety query by pressing the **Yes** button. The microscope will automatically move to the new focus position now.

To abort this operation, press the **No** button. Manual focusing will then be possible.

 During every automatically triggered downward movement of the focusing drive, the **STOP** button will appear on the touchscreen, so that the focusing drive can additionally be stopped instantaneously in the event of any risk of collision.

 Deactivate the parfocality manager before changing objectives on the objective nosepiece. Afterwards, parfocality must be adjusted anew for all the objectives.

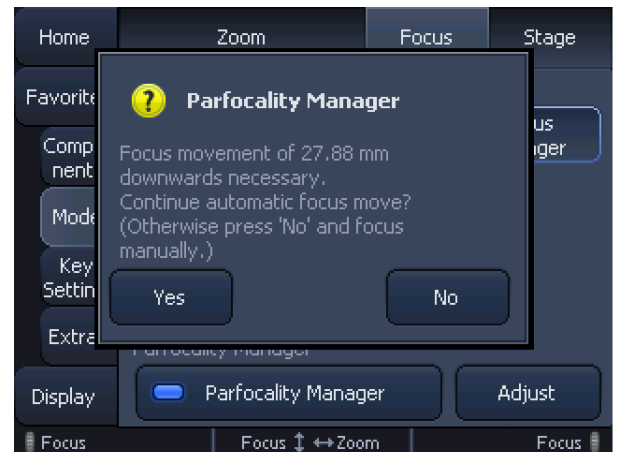


Fig. 70 Warning Displayed by the Parfocality Manager if the Focusing Drive Needs to Move Downward

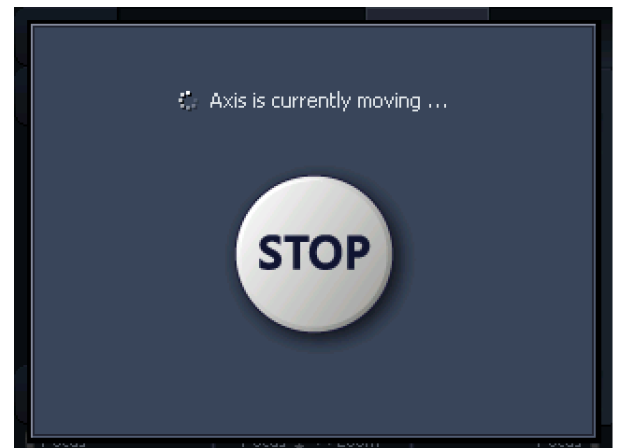


Fig. 71 STOP button



Fig. 72 Inverting the Direction of Movement

4.10.2.3 Stage Tab

Menu call-up:

Home\Setup\Mode\Stage

This tab allows the direction of movement of a motorized mechanical stage connected to the system to be inverted.

The activation of the **Invert Direction** function results in the microscope stage moving to the left when the joystick is deflected to the right (or the other way round) or in moving backward when the joystick is deflected forward (or the other way round).

This feature is particularly valuable when it comes to "tracking" moving specimens.

- Press the **Invert Direction** button to activate this function (Fig. 72).

When this function is activated, the status field will be highlighted in blue.



Fig. 73 Settings for the SteREO Lumar.V12

4.10.2.4 Lumar Settings Tab

Menu call-up:

Home\Setup\Mode\Lumar Settings

Applies to the SteREO Lumar.V12 only.

- Press the relevant button to perform or activate / deactivate the desired function (Fig. 73).

When this function is activated, the status field will be highlighted in blue.

Automatic Filter Recognition

Press the **Active** button to activate / deactivate automatic filter recognition on the filter wheel.

Reset Filter Data

To reset the contents of the **Select Filter** list to the factory-set defaults of the SYCOP 3, press this button. This will delete all manually defined filter data.

After Filter Change

If the **Open Shutter** function is active (blue status field), the shutter will be opened following the filter change. If this function is not active, the shutter will stay closed.

4.10.3 'Key Settings' Submenu

In the **Key Settings** submenu, you can assign selected microscope control functions to the six pushbuttons of the SYCOP 3 or to one or two footswitches connected.

The SYCOP 3 is delivered to the customer with no functions assigned to those button pairs and footswitches (Fig. 74).


4.10.3.1 Buttons Tab

Menu call-up:

Home\Setup\Key Settings\Buttons

Matching the pushbuttons on the SYCOP 3, the button pairs are marked with **Left**, **Center** and **Right** and feature a horizontally arranged left and right button each, to which functions can be assigned.

To assign functions to the pushbuttons of the SYCOP 3, proceed as follows:

- For the selection of the function for the SYCOP 3 button concerned, press the assigned  button to open the **Select Function for Button 1** list (e.g., **Button 1**) (Fig. 75).
- Use the scroll bar to select the relevant function and then press **OK**.

The dialog window will be closed and the selected function will appear on the button.

- Carry out this procedure for all the pushbuttons required.

Fig. 76 provides an example of all SYCOP 3 button pairs being assigned.



Different functions can be assigned to the individual buttons of the pushbutton pairs. Light functions can be assigned in pairs only, e.g., **CL3 Down/CL3 Up** (Fig. 76).



Fig. 74 Assignment of SYCOP 3 Button Pairs - Buttons Not Assigned Yet



Fig. 75 Microscope Function Selection List for Pushbuttons



Fig. 76 Button Pairs Fully Assigned



Fig. 77 Assignment of the SYCOP 3 Footswitches - Buttons Not Assigned Yet


4.10.3.2 Footswitches Tab

Menu call-up:

Home\Setup\Key Settings\Footswitches

The footswitches are designated as **Footswitch Zoom** and **Footswitch Focus**, matching the connection assignment on the SYCOP 3.

To assign functions to the footswitches connected, proceed as follows (similar to the SYCOP 3 button assignment procedure):

- For the selection of the function for the footswitch concerned (e.g., **Footswitch Focus**), press the assigned  button (Fig. 77) to open the **Select Function for Footswitch Focus** list (Fig. 78).
- Use the scroll bar to select the relevant function and then press **OK**.

The dialog window will be closed and the selected function will appear on the button.

- Repeat this procedure for the second footswitch if applicable.



Fig. 78 Microscope Function Selection List for Footswitches



Fig. 79 Footswitches Fully Assigned

4.10.4 'Extras' Submenu

4.10.4.1 Date/Time Tab

Menu call-up:

Home\Setup\Extras\Date/Time

To enter the date and time, proceed as follows:

- Use the scroll bar to set the date and time (Fig. 80).



Fig. 80 Setting the Date and Time

4.10.4.2 Firmware Tab

Menu call-up:

Home\Setup\Extras\Firmware

It contains important information on the current status of the firmware.



Fig. 81 Viewing Firmware Information

4.10.4.3 Calibrate Touch Tab

Menu call-up:

Home\Setup\Extras\Calibrate Touch

If the controls of the touchscreen do not work accurately, proceed as follows:

- Press the **Calibrate Touch** button. Then press as accurately as possible the cross shown. (Use the stylus if available.)

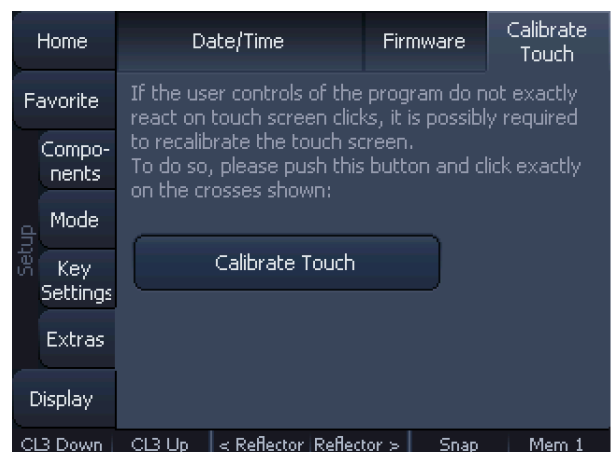


Fig. 82 Calibrating the Touchscreen

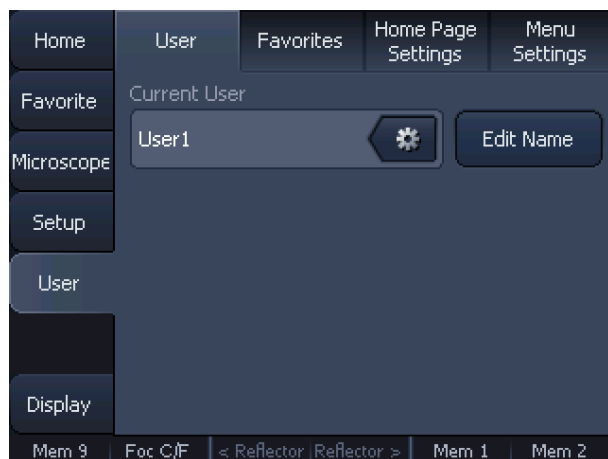


Fig. 83 Calling up the 'User' Main Menu

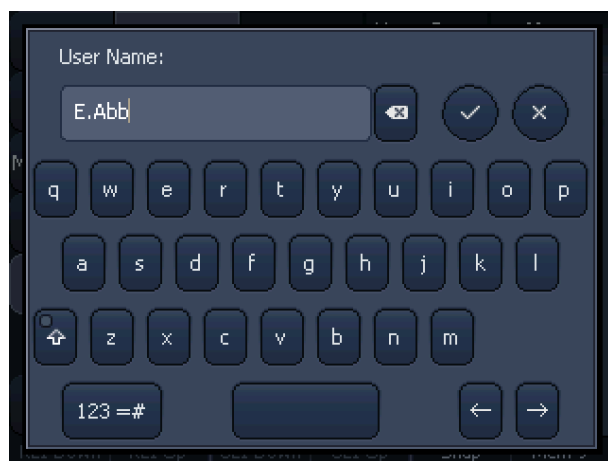


Fig. 84 Entering the User's Name

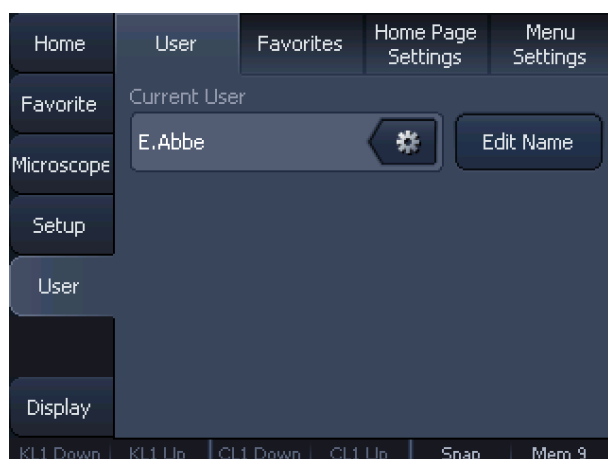


Fig. 85 User "E.Abbe" has been created and selected (Current User)

4.11 'User' Main Menu

For the operation of the microscope, each user can configure the user interface individually, so that it will be best suited for the method of work employed, and then save it in a user-specific way. This will prove useful whenever the microscope system is operated by several users, who prefer to work with their own user interface.

In the **User** main menu, user-specific defaults can be set for the **Home** home page, for the **Favorite** main menu and for the user interface as a whole.

4.11.1 User Tab

Menu call-up:

Home\User\User

When shipped to the customer, the SYCOP 3 comes with the maximum number of configurable users already created (**User1** to **User4**). They can be individually named and configured by the user.


The active user (**Current User**) is displayed (Fig. 83).

Example: Editing User 1

- Press the **Edit Name** button (Fig. 83).
- Using the keypad, enter / change the desired name in the dialog window now appearing (Fig. 84), e.g., **E.Abbe**.
- Press the button to acknowledge the entry. To abort this operation, press the button.

The dialog window will be closed. If you have acknowledged the entry, the user name edited will immediately be displayed as the active user (**Current User**, Fig. 85).

Calling up a User

- For the selection of a (different) user, press the  button (Fig. 83) to open the **Select User** list.
- Using the scroll bar, select the desired user and press **OK** (Fig. 86).

The dialog window will be closed and the user selected will be displayed as the **Current User**.

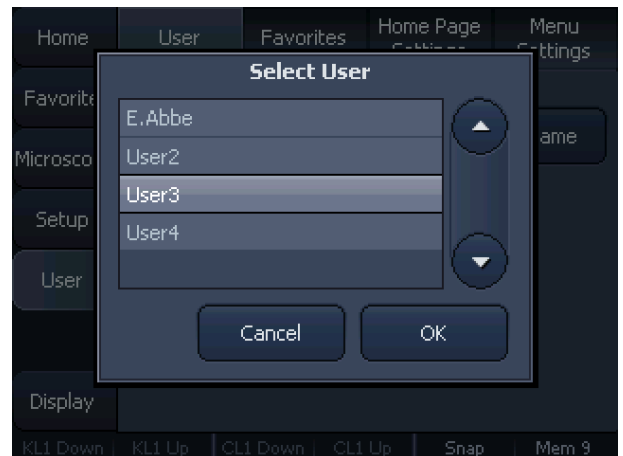


Fig. 86 Calling up a User

4.11.2 Favorites Tab

Menu call-up:

Home\User\Favorites

The **Favorite** main menu allows up to six microscope functions to be put together in a user-oriented way for fast access.

This main menu is configured in **Home\User\Favorites** and is described in Section 4.8, Page 35.

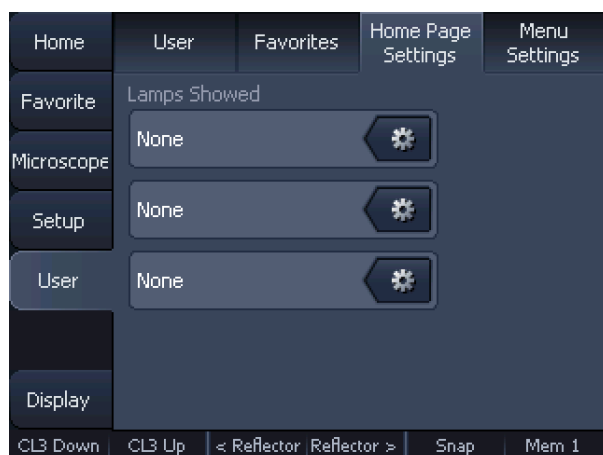


Fig. 87 Home Page Settings (Unconfigured) Screen



Fig. 88 Cold-Light Sources Selection List



Fig. 89 'Home' Home Page Fully Configured (Example)


4.11.3 Home Page Settings Tab

Menu call-up:

Home\User\Home Page Settings

The **Home Page Settings** tab allows you to transfer control of up to three connected cold-light sources to the **Home** home page.

When shipped to the customer, the relevant SYCOP 3 control area of the **Home** home page will always be empty.

- Press the desired  button (Fig. 87) to open the **Select Lamp to Show** list.
- Use the scroll bar to select the desired light source and then press **OK** (Fig. 88).

The light source selected will appear on the button and will be configured for the **Home** home page.

- Follow the same procedure to configure further cold-light sources, as required.

Fig. 89 represents an example of a completely configured **Home** home page (control of three light sources).

4.11.4 Menu Settings Tab

Menu call-up:


Home\User\Menu Settings

With the aid of the **Menu Settings** tab in the **User** main menu, you can

- choose either text-based (Fig. 91) or icon-based (Fig. 92) presentation and
- activate or deactivate the use of the beeper for the acknowledgment of a function.

Activating Show Icons for the Navigation Bar

- Press the **Show Icons** button to select either text-based or icon-based presentation (Fig. 90).

Icon-based presentation has been selected if the  status field on the button is highlighted in blue. If this is not the case, text-based presentation will be active.

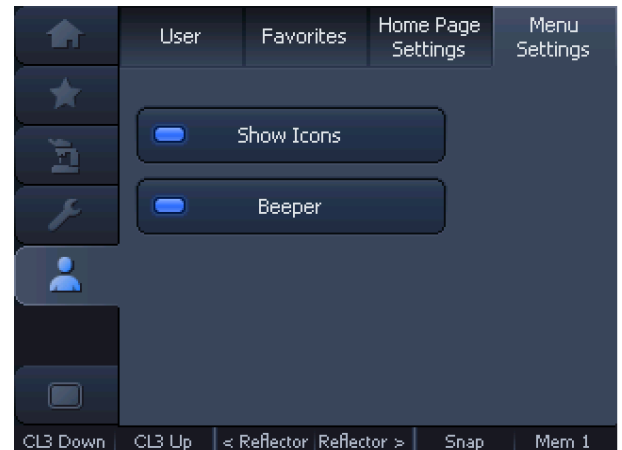


Fig. 90 Selecting the Display Mode




Fig. 91 Text-Based Presentation of the 'Home' Home Page



Fig. 92 Icon-Based Presentation of the 'Home' Home Page

Selecting Beeper Settings

- Press the **Beeper** button to activate or deactivate the beeper (Fig. 90).

The beeper is activated if the  status field on the button is highlighted in blue.

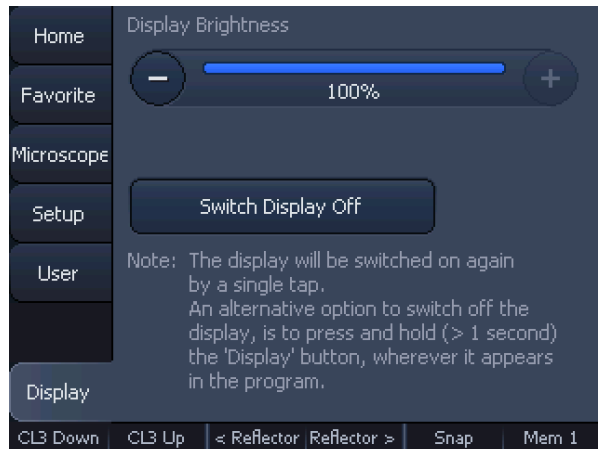


Fig. 93 Selecting Display Functions

4.12 'Display' Main Menu

Menu call-up:

Home\Display


The **Display** main menu allows you to set the backlight brightness and to turn off the touchscreen display temporarily.

Setting Brightness

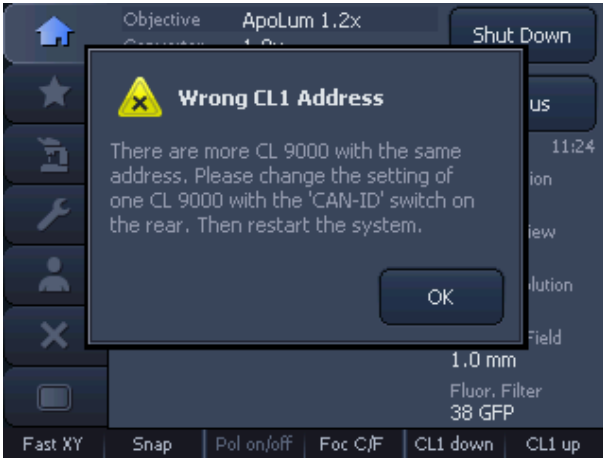
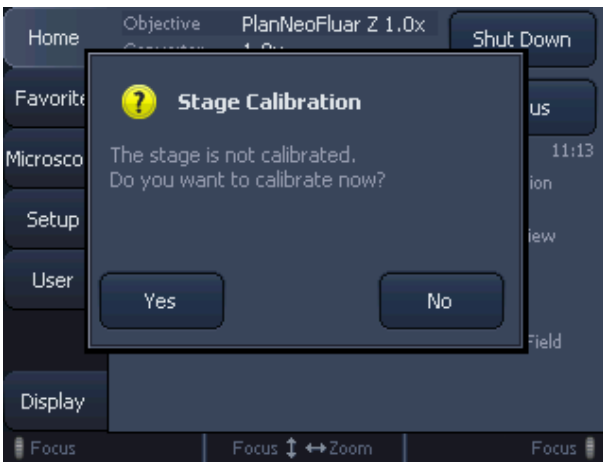

- Press the **-** or **+** button of the **Display Brightness** controller and hold that button until the desired brightness has been set (Fig. 93).

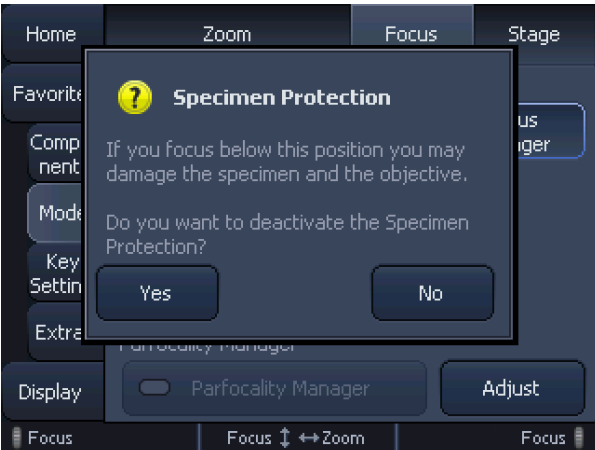
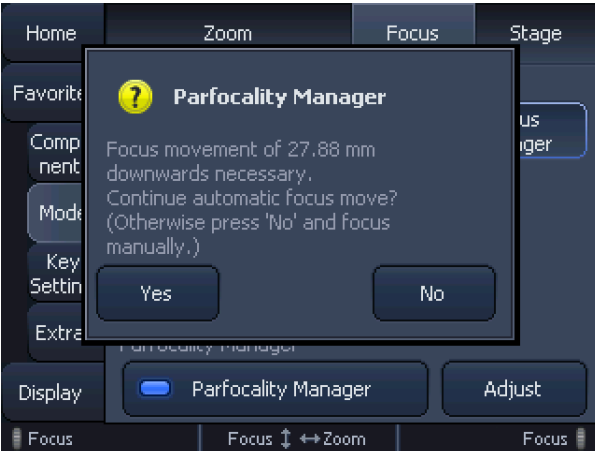

Switching the Display On / Off

- When you press the **Switch Display Off** button, the display will be switched off.
- To switch it on again, press the touchscreen briefly.

 Alternatively, you can turn off the touchscreen by pressing the **Display** button in the navigation bar (for more than 1 second) until the display switches off. To switch it on again, press the touchscreen briefly.

4.13 Error Messages and Warnings

| | |
|---|---|
|  | <p>Error Message: Wrong CL1 Address</p> <p>There are more CL 9000 with the same address. Please change the setting of one CL 9000 with the 'CAN-ID' switch on the rear. Then restart the system</p> <p>OK</p> |
|  | <p>Warning: Stage Calibration</p> <p>The stage is not calibrated. Do you want to calibrate now?</p> <p>Yes No</p> |
|  | <p>Warning: Stage Calibration</p> <p>Stage will be moved to lower left end switch position. Please remove specimen to avoid damage!</p> <p>OK Cancel</p> |

| | |
|--|--|
|  <p>The screenshot shows a dark-themed software interface with a central dialog box titled "Specimen Protection" with a yellow question mark icon. The dialog text reads: "If you focus below this position you may damage the specimen and the objective. Do you want to deactivate the Specimen Protection?" Below the text are two buttons: "Yes" and "No". The background interface includes tabs for "Home", "Zoom", "Focus", and "Stage", and a "Parfocality Manager" toggle switch.</p> | <p>Warning: Specimen Protection</p> <p>If you focus below this position, you may damage the specimen and the objective.</p> <p>Do you want to deactivate the Specimen Protection?</p> <p>Yes No</p> |
|  <p>The screenshot shows a similar software interface with a dialog box titled "Parfocality Manager" with a yellow question mark icon. The dialog text reads: "Focus movement of 27.88 mm downwards necessary. Continue automatic focus move? (Otherwise press 'No' and focus manually.)" Below the text are "Yes" and "No" buttons. The background interface shows the "Parfocality Manager" toggle switch is turned on.</p> | <p>Warning: Parfocality Manager</p> <p>Focus movement of 27.88 mm downwards necessary.</p> <p>Continue automatic focus move? (Otherwise press 'No' and focus manually.)</p> <p>Yes No</p> |
|  <p>The screenshot shows a software interface with a dialog box titled "Attention" with a yellow exclamation mark icon. The dialog text reads: "This objective may not be used in 3D observation mode. Please move nosepiece into 2D position!" Below the text is a slider control for "LED 69 Cy 2, YFP" with a blue bar and "Off" text, and "0.7 mm" is displayed. The background interface shows objective and converter information.</p> | <p>Error Message: Attention</p> <p>This objective may not be used in 3D observation mode.</p> <p>Please move nosepiece into 2D position!</p> |

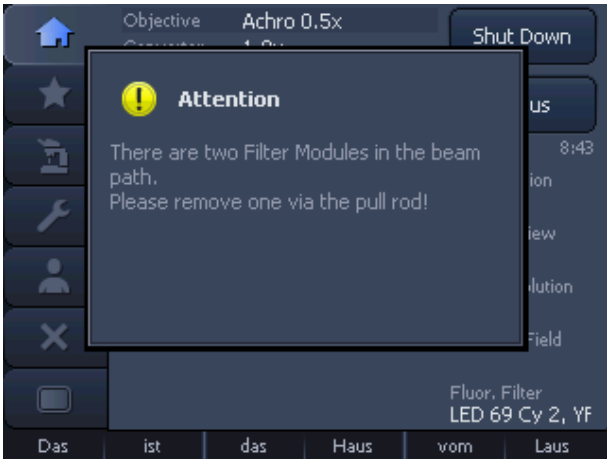
| | |
|---|--|
|  | <p>Warning: Attention</p> <p>There are two Filter Modules in the beam path. Please remove one via the pull rod!</p> |
|---|--|

Table 8 Error Messages and Warnings

5 CARE, MAINTENANCE AND SERVICE

5.1 Care



Before cleaning, turn the device off and pull the power plug.



Make sure that no moisture can penetrate into the device.

Care of the SYCOP 3 is limited to the following:

- Be sure to switch the device off after each use and to place the protective cover over the device to protect it from dust and moisture.
- Do not set up the device in moist rooms. Humidity must not exceed 75 %.
- Be sure to use a dry cotton cloth only to clean the stickers attached to components.
- Without applying pressure, remove dust and loose dirt particles on visible optical surfaces with a fine brush, a blower brush, cotton swabs, optical paper or a dust-free cotton cloth.
- Remove water-soluble dirt (coffee, coke, etc.) by breathing on it and wiping it off with a dust-free cotton cloth or a moistened cloth. A mild detergent may be added to the water.
- Remove stubborn oily or greasy dirt (immersion oils, finger prints), using cotton swabs, lens cleaning tissue or a dust-free cotton cloth and optical cleaning mixture L.
This cleaning mixture is made from 90 volume percent of benzine and 10 volume percent of isopropanol (IPA). The ingredients are also known under the following synonyms:
Benzine: Ligroin, petroleum ether
Isopropanol: 2-propanol,
 dimethyl carbinol,
 2-hydroxypropane.

Heed the following suggestions when using the SYCOP 3 in regions with a hot and humid climate:

- Keep the device in bright, dry and well-ventilated rooms, where humidity is less than 75 %. Store particularly sensitive components and accessories, such as objectives, transmission gratings and eyepieces, in drying cabinets.

Precision mechanical and optical devices are always prone to mold growth if

- relative humidity exceeds 75 % for more than three days in a row at temperatures between +15 °C and +35 °C,
- they are set up in dark rooms without air movement,
- there are dust deposits and finger prints on optical surfaces.
- Be sure to use a dry cotton cloth only to clean the stickers attached to components.

5.2 Maintenance

Replacing Fuses



Always be sure to pull the power plug on the EMS 3 controller before replacing fuses.

The fuse compartment is located at the back of the EMS 3 controller. It is integrated in the power supply socket of the device and contains two **T 4 A/H 250 V** fuses.

- Pull the power plug.
- Pull out the fuse holder (Fig. 94/1) frontward. Use a small screwdriver for that if necessary.
- Remove defective fuses from the fuse holder and replace them with new ones.
- Push the fuse holder into the fuse compartment (Fig. 94/2) as far as it will go.
- Insert in the power plug.

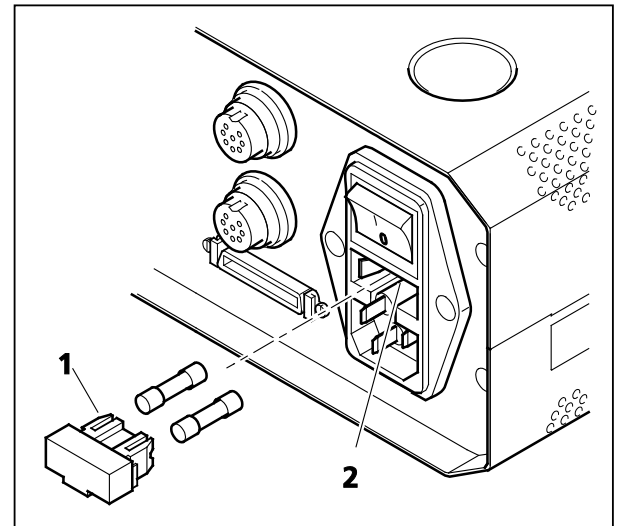



Fig. 94 Replacing Fuses on the EMS 3 Controller

5.3 Troubleshooting and Fault Elimination

| Description of Fault | Cause of Fault | Elimination of Fault |
|--|--|--|
| When a Mem function is called up on the SYCOP 3, the illumination impression on the transillumination top 450 mot. differs from the illumination impression during the storage operation. | Total magnification Mag was not saved during the storage operation, and total magnification Mag was changed by a zooming process between storage and call-up of a Mem function. | Call up and save with the same total magnification Mag . It is preferable that total magnification Mag be saved as well. |
| | The objective was changed between storage and call-up of a Mem function. | Move the objective used during the storage operation back into the light path. |
| | The Aperture diaphragm opening was changed between storage and call-up of a Mem function. | Call up and save with the same Aperture diaphragm opening. It is preferable that the Aperture diaphragm opening be saved as well. |
| The SYCOP 3 display is dark even though the LED on the EMS 3 controller is lit. | The display was deactivated by a user via the display button on the user interface (to minimize light interference for light sensitive camera images, for example). | Touch any part of the touchscreen. This will make the display work normally again. |
| The touchscreen of the SYCOP 3 does not respond at the touch points as expected. | The touchscreen is not calibrated correctly. | Calibrate the touchscreen via Home\Setup\Extras\Calibrate Touch . (See Page 67.) |
| A warning window appears on the display of the SYCOP 3, telling you to pull out the STOP button. The motorized focusing drive cannot be operated although the STOP button has been pulled out. | The two end switches on the motorized focusing drive are set in such a way that they respond at the same time. | Adjust one end switch or both switches to ensure that they no longer respond. In so doing, make sure, as is described on Page 9, that no collision can occur in the travel range between the two switch positions. |

Table 9 Troubleshooting and Fault Elimination

 Should a problem arise that has not been listed here, read the firmware status via **Home\Setup\Extras\Firmware** and contact Carl Zeiss Service.

5.4 Disposal

The product has been developed, tested and manufactured in accordance with the applicable environmental regulations and directives of the European Union.

The product and the relevant accessories meet the requirements of EU Directives 2002/95/EC (RoHS) and 2002/96/EC (WEEE, as well as the provisions of the German Law on Electrical and Electronic Equipment (ElektroG).

The product contains electronic components which must not be disposed of in household waste. Rather, they have to be disposed of as specified in WEEE Directive 2002/96/EC and in compliance with the national laws in force.

Please contact your Carl Zeiss dealership or customer service organization if you need more information on disposal and recycling.

5.5 Service

Be sure to have all the repairs of mechanical, optical and electronic parts located inside the SYCOP 3 system control panel performed by Carl Zeiss Customer Service or specially authorized personnel only.

In order to ensure optimum adjustment and long smooth operation of your SYCOP 3, we recommend that you sign a service / maintenance contract with Carl Zeiss.

If you wish to place additional orders or if service is required, please contact your Carl Zeiss dealership.

Further information is available on the Internet at

micro@zeiss.de

<http://www.zeiss.de>

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6.3 Glossar

| | |
|-------------------------|--|
| ACR | Automatic Component Recognition |
| Calibrate Touch | Calibrate Touchscreen |
| CL Fiber Light | Cold-Light Source (Type: CL 9000 LED CAN) |
| Clickstop (Zoom) | Click Stop Position (Zoom), Zoom Factor Standard |
| Close Status | Close Status (Long Status) |
| Compensate Obj. Changes | Compensate Objective Changes |
| Diffuse Reflection | Diffuse Reflection on a Matted Reflecting Surface |
| Display | Display, Touchscreen Control Panel |
| DOC | Observation via Camera Image (Documentation) |
| Down | Down, Reduce |
| EMS 3 | Electronic Module for Stereo and Zoom Microscopes, Third Generation |
| Fluor. Filter | Fluorescence Filter |
| HiLite | Light Zoom: Microscope function that matches the light cone exactly to the visible specimen field in every zoom position |
| HXP 200 C | 200-Watt Mercury Vapor Short-Arc Lamp with CAN Connection |
| KL Fiber Light | Cold-Light Source (Type: KL 2500 LCD) |
| KT 150x100 | Mechanical Stage, Travel Range: 150 mm x 100 mm |
| LED FL | Fluorescence LED |
| Light Mngr | Light Manager |
| Lumar | SteREO Lumar Fluorescence Stereo Microscope |
| Lumar Settings | Settings for the SteREO Lumar |
| Magnification / Mag | Magnification (Zoom) |
| MaRC | Manual Rotary Control |
| OZ | Location No. |
| Pol Tube | Tube for Polarization |
| Regular Reflection | Regular Reflection on a Glossy Reflecting Surface |
| Reset Filter Data | Reset Filter Data (to SYCOP 3 factory settings) |
| RW | Readable and Writable |
| Snap | Triggering of Camera Function (Snapshot) and Return to Start Position |
| SYCOP | System Control Panel, Third Generation |
| TL | Transmitted Light |
| TL Basic | Transmitted-Light Base |
| Up | Up, Increase |
| UV | Ultraviolet |
| VIS | Visual Observation through Eyepieces |

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